P.R. NOT ENT'D.

THE IRON AGE

Published every Thursday Morning by David Williams Co., 14-16 Park Place, New York.

Vol. 81: No. 2. New York, Thursday, January 9, 1908.

$5 00 a Year, including Postage.
Single Copies, 15 Cents

Reading Matter Contents.....page 184
Alphabetical Index to Advertisers " 195
Classified List of Advertisers " 185
Advertising and Subscription Rates " 194

REED F. BLAIR & CO.
FRICK BUILDING, PITTSBURG, PA.
STANDARD CONNELLSVILLE
COKE
FOUNDRY FURNACE CRUSHED

The American Mfg. Co.
Ropes and Twines
65 Wall Street, New York

BRISTOL'S
RECORDING INSTRUMENTS
For all commercial purposes.
Simple, Accurate, Durable
Used everywhere by those who are satisfied with the best only.
Send for Cat. R and Prices.
THE BRISTOL CO., Waterbury, Conn,
NEW YORK CHICAGO

WE MAKE ALL KINDS OF BRAIDED CORD, INCLUDING
SAMSON SPOT CORD
SAMSON CORDAGE WORKS, Boston, Mass.

TURNBUCKLES

Cleveland City Forge and Iron Co., - Cleveland, O.

FOUNDRY IRON.
Pilling & Crane Girard Building, Phila. Machesney Bldg., Pittsb'g Empire Bldg., New York.

LUFKIN TAPES and RULES
MADE IN AMERICA
THE BEST IN THE WORLD
and
THE LUFKIN RULE CO., Saginaw, Mich. U.S.A.
New York, London, Eng., Windsor, Can.

It takes both
GOOD MATERIAL
and GOOD WORKMANSHIP
to make a
GOOD JOB
Use
"APOLLO BEST BLOOM" GALVANIZED SHEETS
and the rest depends upon you.
See
AMERICAN
SHEET & TIN PLATE
COMPANY'S
Adv. on Page 16

A POWERFUL ASSET
which dealers cannot afford to overlook is combined in the wide reputation and established popularity of UMC Shot Shells and Cartridges. When you point to the UMC trade mark, your argument is backed by the largest cartridge and shot shell factory in the world and nearly 50 years' endorsement of UMC ammunition as the "world's standard."
THE UNION METALLIC CARTRIDGE CO.
Write for catalogue and advertising material to
The M. HARTLEY CO., Sole Representative,
313 Broadway, New York City.

WATER TUBE BOILERS *The* **Babcock & Wilcox Co.**
85 Liberty Street New York
See page 56

WHEN IT'S a QUESTION of PROFITS
People Are Inclined to be Interested
¶ **Hardware Dealers** find "Capewell" nails the most profitable to handle. **Horseshoers and Horse Owners** believe them to be the most economical to use.
¶ The **great volume** of "Capewell" **sales** throughout the country attracts Merchants. The **absolute reliability and superior qualities** of "Capewell" nails satisfies Shoers and Owners.
MADE BY
THE CAPEWELL HORSE NAIL CO., Hartford, Conn.

JENKINS '96 SHEET PACKING
Flexible enough to bend easily without cracking, soft enough to fill up any slight unevenness of surfaces, but sufficiently strong and tough to resist all pressures of steam. Has been used for years under all conditions, and has proved its merits in thousands of plants.
All genuine bears the Trade Mark, and is guaranteed.
JENKINS BROS., New York, Boston, Philadelphia, Chicago, London

"Swedoh" Cold Rolled Steel is unexcelled for **Drawing** and **Stamping**
THE AMERICAN TUBE & STAMPING COMPANY
(Water and Rail Delivery) BRIDGEPORT, CONN.
SEE PAGE 23

MAGNOLIA ANTI FRICTION METAL
The Standard Babbitt of the World
We manufacture everything in the Babbitt Line.

MAGNOLIA METAL CO,
New York: 115 Bank St. Chicago: Fisher Building. Montreal: 31 St. Nicholas St.

A
LARGE STOCK
OF
ENAMELING STEEL
WRITE DEP'T. S
FOR
STOCK SHEET
SHOWING
GAUGES and SIZES
READY FOR
IMMEDIATE
DELIVERY

FOLLANSBEE BROTHERS COMPANY
PITTSBURGH

BRASS { SHEET ROD WIRE
COPPER { SHEET ROD WIRE
GERMAN SILVER { SHEET ROD WIRE
LOW BRASS, SHEET BRONZE, SEAMLESS BRASS AND COPPER TUBING, BRAZED BRASS AND BRONZE TUBING : : : : :

Waterbury Brass Co.
WATERBURY, CONN.
99 John St., New York. Providence, R. I.

Bridgeport Deoxidized Bronze & Metal Co.
BRIDGEPORT, CONN.
Phosphor and Deoxidized Bronze
Composition, Yellow Brass and Aluminum Castings, large and small

The Plume & Atwood Mfg. Co.
Manufacturers of
Sheet and Roll Brass
and
WIRE
Printers' Brass, Jewelers' Metal, German Silver and Gilding Metal, Copper Rivets and Burrs
Pins, Brass Butt Hinges, Jack Chain Kerosene Burners, Lamps, Lamp Trimmings, &c.
279 Broadway, NEW YORK
Room 508 Heyworth Building, East Madison St., CHICAGO, ILL.
Rolling Mill THOMASTON, CONN. Factories WATERBURY, CONN.

SCOVILL MFG. CO.
MANUFACTURERS OF
BRASS, GERMAN SILVER,
Sheets, Rolls, Wire Rods,
Bolts and Tubes,
Brass Shells, Cups, Hinges, Buttons,
Lamp Goods.
Special Brass Goods to Order.
FACTORIES:
WATERBURY, CONN.
DEPOTS:
NEW YORK CHICAGO BOSTON

Henry Souther Engineering Co.
HARTFORD, CONN.
Consulting Chemists, Metallurgists and Analysts.
Complete Physical Testing Laboratory.
Expert Testimony in Court and Patent Cases.

Matthiessen & Hegeler Zinc Co.
La Salle, Illinois.
SMELTERS OF SPELTER
AND MANUFACTURERS
SHEET ZINC AND SULPHURIC ACID
Special Sizes of Zinc cut to order. Rolled Battery Plates.
Selected Plates for Etchers and Lithographers' use.
Selected Sheets for Paper and Card Makers' use.
Stove and Washboard Blanks.
ZINCS FOR LECLANCHE BATTERY.

Arthur T. Rutter & Co.
256 Broadway
NEW YORK
Small tubing in Brass, Copper, Steel, Aluminum, German Silver, &c. Sheet Brass, Copper and German Silver. Copper, Brass and German Silver Wire. Brazed and Seamless Brass and Copper Tube. Copper and Brass Rod.

BRASS FOUNDERS FINISHERS J. J. RYAN & CO.
105-109 So. Jefferson St., Chicago.
Best Bronze, Babbitt Metals, Brass and Aluminum CASTINGS On Short Notice

"Search-Light"
GAS
Bicycle Lanterns
Send for Circulars and Electrotypes.
The BRIDGEPORT BRASS CO.
BRIDGEPORT, CONN.
Postal Telegraph Building, Broadway and Murray Street, NEW YORK

GERMAN SILVER | **NICKEL ANODES**
Brass, Bronze, and Copper
THE SEYMOUR MFG. CO. - - SEYMOUR, CONN.

HENDRICKS BROTHERS
Proprietors of the Belleville Copper Rolling Mills,
Manufacturers of Braziers' Bolt and Sheathing
COPPER
COPPER WIRE AND RIVETS
Importers and Dealers in
Ingot Copper, Block Tin, Spelter, Lead, Antimony, etc.
49 CLIFF ST., NEW YORK.

PHOSPHOR-BRONZE
GERMAN SILVER
THE RIVERSIDE METAL CO.
RIVERSIDE, N. J.

THE IRON AGE

New York, Thursday, January 9, 1908.

LIBRARY of CONGRESS
Two Copies Received
JAN 10 1908
Copyright Entry
CLASS XXc. No.
COPY B.

The Steel Ore Dock at Narvik, Norway.

The Outlet for the Kiirunavaara Iron Ores—Terms of the Swedish Government Contract.

BY JOHN BIRKINBINE, PHILADELPHIA.

In handling the enormous quantities of iron ore produced in the Lake Superior region there has been developed at upper lake ports a system of loading docks, which now aggregate about 8 miles in length, having pockets of sufficient capacity to hold approximately 1,300,000 tons of iron ore. The convenience of this system of docks, in which ore conveyed from the mines falls from drop-bottom cars into pockets, the rapidity with which vessels are loaded from the pockets by hinged spouts, and the small cost per ton for handling the ore have naturally drawn attention to them, and they have served as models for construction elsewhere.

Twelve years ago a distinguished Norwegian engineer, Col. Ole W. Lund, came to the writer with letters of introduction and was assisted in an inspection of the ore handling facilities then provided on the Great Lakes, in which inspection he secured courteous consideration from the local managers. Returning to Norway he, as chief engineer of the Luossavaara-Kiirunavaara Aktiebolag, undertook the design and construction of the harbor, docks, railroad terminus and other accessories at Narvik, and is now in charge of the company's affairs in Norway.

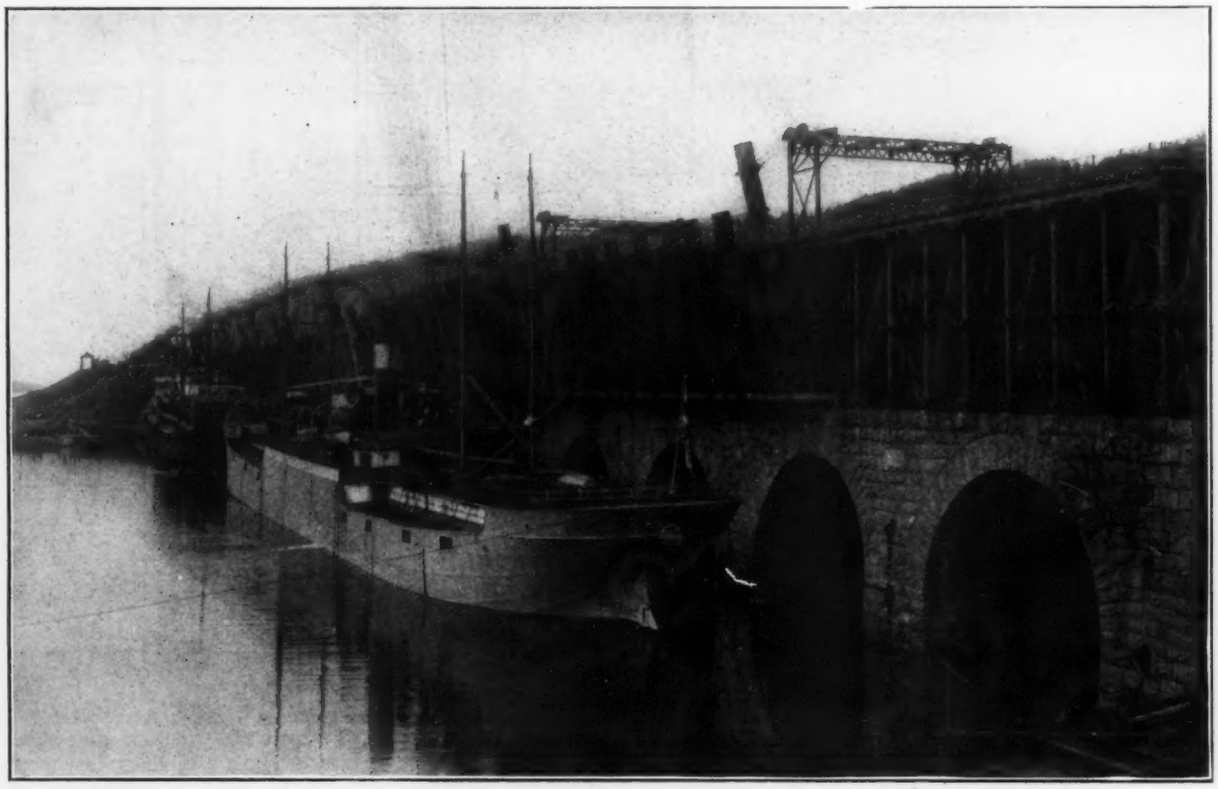


Fig. 1.—Steel Ore Dock at Narvik, Norway.

The Kiirunavaara Deposits.

The large iron ore deposits of Kiirunavaara in the North of Sweden have been wrought since 1902, producing hard magnetite, which contains from 60 to 70 per cent. of metallic iron, with phosphorus ranging from less than 0.05 to 3 per cent. or even 4 per cent., the average ore mined carrying from 0.75 to 1.5 per cent. of phosphorus. The following excerpts are taken from a paper presented at the meeting of the American Institute of Mining Engineers in July, 1907, by Prof. Hjalmar Sjögren, Ph.D., of Stockholm, Sweden:

> The province of Norrbotten contains many times as much iron as all the rest of Sweden. Some of the deposits in this province may be reckoned among the largest in the world. . . . The iron ore deposit of Kiirunavaara is undoubtedly the largest deposit of ore found in Europe. . . . The iron ore occurring among the porphyry masses forms, on the whole, pure, nearly homogeneous ore deposits. Other minerals found in it are of comparatively subordinate significance. . . . The only mineral that occurs in the ore with undoubtedly primary characters is apatite, the distribution of which is exceedingly irregular, so that the percentage of phosphorus in the ore varies greatly. . . . The large ore deposit of Kiirunavaara is an enormous mass, roughly rectilinear in outline. In length the ore is exposed in the hills for more than 2800 m., and through drilling and magnetic investigation has been proved to extend at least 1200 m. further. The width of the deposits in some places exceeds 200 m. . . . Owing to the absence of other impurities the iron percentage of these ores is very high. . . . Apart from the ores richest in apatite, the average amount of iron is from 68 to 69 per cent.

Prof. Hjalmar Lundbohm in a description of the deposits says: "The main mass of the ore of Kiirunavaara contains more than 0.8 per cent., generally from 1 to 2 per cent., and not infrequently from 3 to 4 per cent., or still more of phosphorus. On the whole the iron ores of Kiirunavaara may be said to contain a higher percentage of phosphorus than any other known ore deposit of great extent."

With an iron industry limited by fuel conditions Sweden can use but a small amount of this ore; and Norway requires practically no iron ore. The development of the deposits, therefore, depends upon exportation.

The Kiirunavaara (Ptarmigan Mountain) deposits are the most important of a number of groups of iron ore properties in Swedish Lapland, which have lately attracted much attention, but the Gellivaara deposits were the first group exploited.

At present 1,500,000 metric tons (1000 k. g., 2204 lb.) are shipped annually from Narvik to Germany, Belgium and England, and some cargoes have reachel the United States, but it is intended to increase the shipment by 400,000 tons annually until the maximum of 3,300,000 tons per year is attained. The Swedish official statistics for 1906 give the total iron ore production of Sweden as 4,502,597 metric tons, of which 2,674,266 tons came from Swedish Lapland (Norrbottens Lan). Of this last named amount the deposits of Kiirunavaara, the ore from which reached consumers via Narvik, produced 1,488,022 metric tons. The contract under which the group of mines is operated and the facilities provided for conveying ore to the shipping port of Narvik, north of the Arctic Circle, and landing it there from cars to vessels may prove of interest to the readers of *The Iron Age*. The description, prepared with the assistance of Col. Ole W. Lund, is submitted with a number of illustrations.

The Swedish Government constructed a railroad, as part of the contract, from the Kiirunavaara to the Norwegian frontier (107 miles), and has undertaken to transport to the frontier, during 25 years from January 1, 1908, a total not exceeding 75,000,000 tons at a freight rate of 71 cents per ton. The railroad from the frontier to the shipping port of Narvik, Norway (25 miles), has been built by the Norwegian Government. The freight rate has hitherto been 20 cents per ton, but may be altered in the future. The rail traffic charge at present is therefore 91 cents for 132 miles, or slightly less than 7 mills per ton-mile.

The Norwegian Government constructed its part of the railroad from the Swedish frontier to the first switch rail at Narvik, and the company built the entire installation at Narvik, comprising an extensive switching yard, stockyard for storing ore, repair shop and ore dock; also a central plant for supplying electric light and power and a plant for unloading coal. At Kiirunavaara the railroad has an elevation of 500 m. above sea level, and where the Swedish-Norwegian boundary is passed the level is 520 m. The maximum grade on the portion of the railroad in Sweden is 1 per cent. against traffic, but in Norway there are no adverse grades, although 1.9 per cent. in favor of traffic limits the train capacity to the ability of the locomotives to haul empty cars over a short section toward the mines.

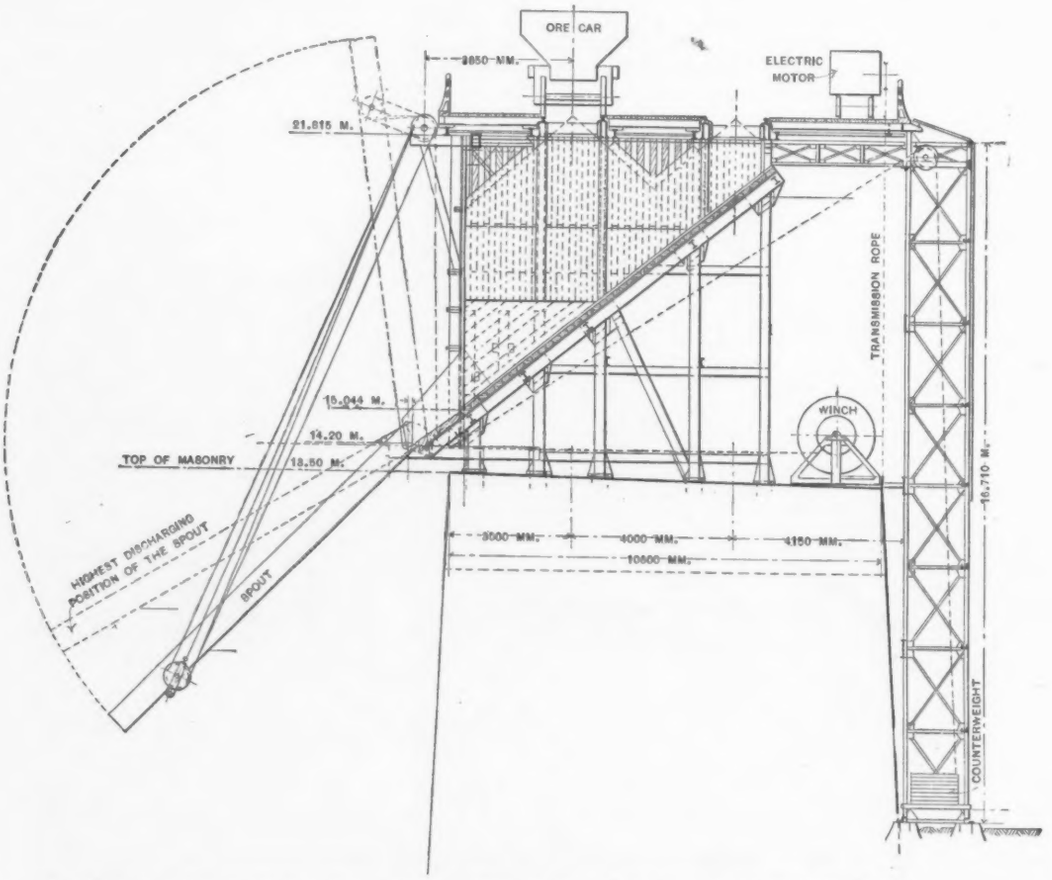


Fig. 2.—Elevation of Steel Pockets.—Section Through the Center of a Spout of Ordinary Hight.

The Swedish Government Ore Contract.

The maximum output from the Kiirunavaara group of mines, 3,300,000 tons, has been fixed by contract, made between the Swedish Government and the owners of the ore deposits, the Luossavaara-Kiirunavaara Aktiebolag, by which the former seems to be favored. This contract provides that the company shall from January 1, 1908, increase its capital stock to 80,000,000 Swedish crowns ($21,600,000) in fully paid up shares. One-half of the stock (being 5 per cent. preference shares) is to be delivered without cost to the Swedish Government, together with an option, under which the Government may purchase in 1933 the other half of the company's stock at a price which is to be fixed by valuation. In addition the company had to transfer to the Swedish Government without remuneration the important ore deposits of Mertainen and Ekstromsberg; also a part of Luossavaara, the latter being 4 miles northeast of Kiirunavaara.

A portion of the rails laid on the Norwegian Railroad were manufactured in the United States. The locomotives on this section are of Swiss and Norwegian make, while those on the Swedish Railroad and the dock switching equipment were made in Sweden. Most of the machine tools, the hoisting engines, cableways, &c., were of American manufacture or followed United States patterns. The air compressors and drills used at the mines also came from the United States.

The Harbor at Narvik.

The port of Narvik is situated at the end of the Ofoten Fjord on the West Coast of Norway, at 68° 30′ north latitude. Owing to the influence of the Gulf Stream and the mild climate of Western Norway, even at this high northern latitude, the harbor does not freeze

and navigation is always open. On the other hand, the outlet for the Gellivaara ore deposit in the same district, Norrbottens Lan, is the port of Lulea at the head of the Gulf of Bothnia, about 3 degrees south of Narvik and below the Arctic Circle, is closed by ice for about seven months of the year.

The Narvik harbor, a natural bay of 1½ to 2 miles in width and length, is well protected and easily accessible from the sea. The depth averages 35 m. (115 ft.), and the anchorage is good. The ordinary tide is 10 ft., but spring tides occasionally rise to 16½ ft. above low water. The harbor is surrounded by rather steep rocky hills and mountains extending into the water, which reaches its full depth at a short distance from shore. It was therefore impracticable to erect a double sided dock projecting out into the harbor, similar to the practice at Lake Superior ports, and a loading dock was constructed nearly paralleling the shore, with pockets and spouts on one side only. The dock was built inside a substantial cofferdam, which, although it had to sustain a water pressure up to 42.6 ft., was made so tight that little pumping was required. This cofferdam was composed of a series of timber caissons sunk to position by the weight of rails placed upon them. They were subsequently filled with clay and backed with the same material, held in place by a masonry retaining wall. After the rock within the cofferdam had been blasted away to secure the requisite depth and the masonry piers had been carried above high water, the temporary work was removed.

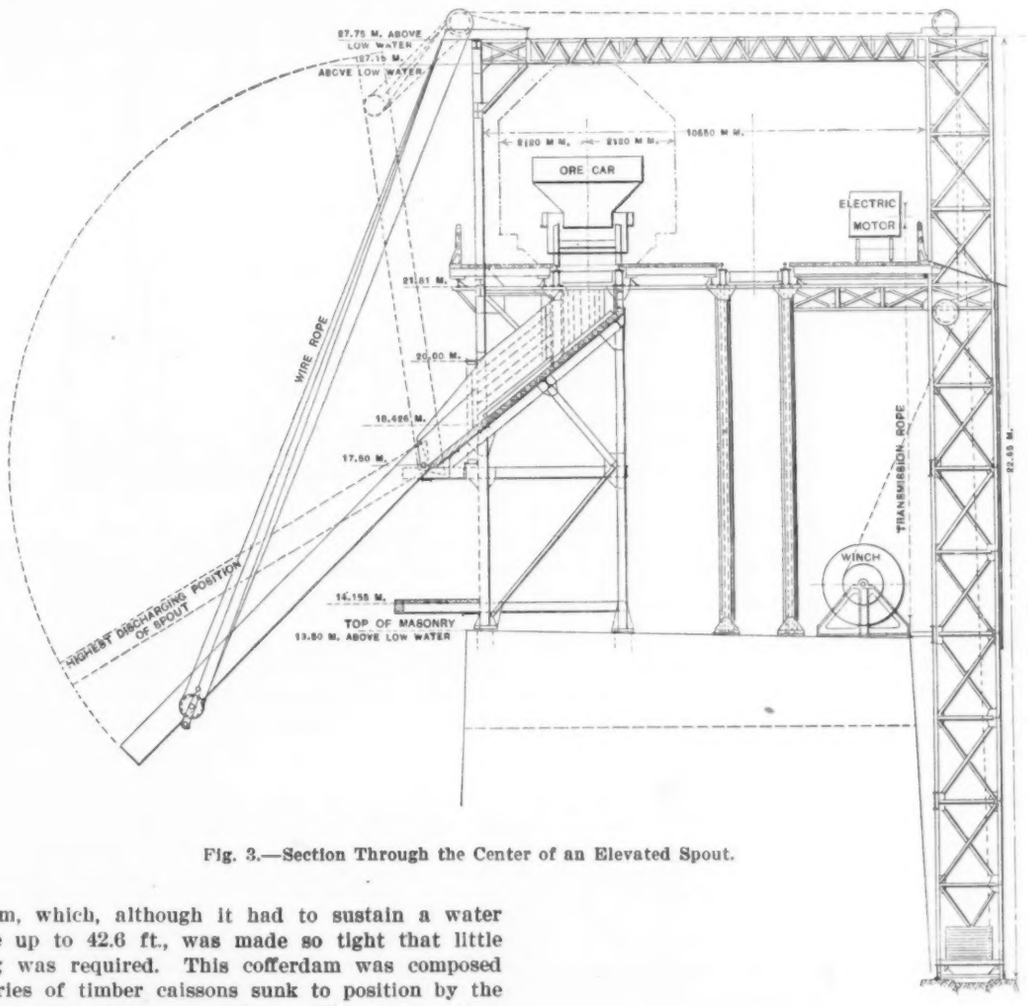


Fig. 3.—Section Through the Center of an Elevated Spout.

The Construction of the Dock.

The ore dock is 356 m. (1168 ft.) long and the rails are 72 ft. above low water. The depth alongside the dock is 26 ft. at low water. The steel superstructure of the dock is carried upon a granite masonry base, consisting of a series of arches of 39.4 ft. span, supported on granite piers, which are 16½ ft. thick. The piers rest upon the solid rock, which has been blasted away to afford a uniform depth of 26 ft. below low water. The location and general features of the ore dock and its size, as compared with two 7000-ton vessels, are illustrated by Fig. 1.

The top of the granite base is 44 ft. above low water, and at this level its width is 35 ft. From the granite base the superstructure rises. This is composed entirely of structural steel and plate steel, except the wooden top platform and the timber lining of the pockets, the latter being faced with rails to withstand the abrasion from hard ore. The steel was rolled in Germany and fabricated in Norway.

Twenty-six steel pockets and three elevated spouts have been built covering a length of 370 ft., and the remaining portion of the dock is provided for the present with a timber superstructure, from which the ore can be loaded through spouts direct from the cars into the vessels. The distance from center to center of the pockets is 13 ft., and the capacity of each pocket is 240 metric tons.

The spouts, which are 33 ft. long, are balanced by counterweights and raised or lowered by winches placed placed underneath the pockets. All of the winches are worked by means of a transmission rope from an electric motor placed on a trolley car, as shown in Figs. 2 and 3, which travels on a 2-ft. gauge track on top of the superstructure, so that it can be shifted from one spout to another. Figs. 4 and 5 will also assist in explaining some of the details of construction. These four illustrations are from drawings supplied by Colonel Lund. The dimensions, it will be noted, are given in meters.

The hight of the dock is insufficient to accommodate at high tide empty vessels of, say, 7000 tons, such as shown in Fig.1. In order to load such steamers under these circumstances extra spouts are placed at a higher level at intervals, so that ore can be dumped into the hatches direct from railroad cars until the steamer settles sufficiently for the ordinary spouts to become available. Fig. 3 shows a section of one of these high spouts.

The ore is brought from the mines or stock piles to the dock in three-axled hopper cars, discharging at the bottom. The weight of the car is 11 tons and the net load of ore is 35 tons. The superstructure of the dock, the

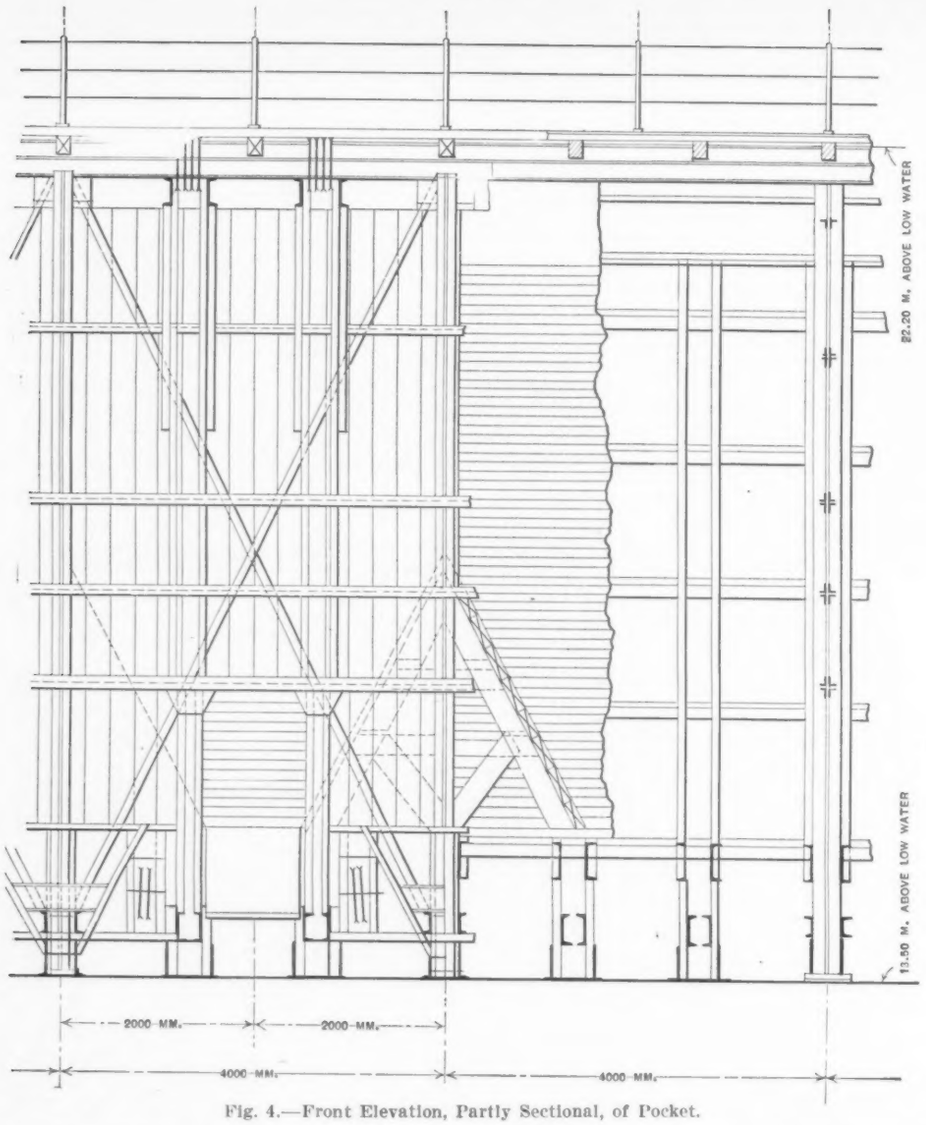


Fig. 4.—Front Elevation, Partly Sectional, of Pocket.

railroad bridges, &c., are made amply strong to permit of the load being increased to 20 tons per axle.

The construction of the dock was commenced in October, 1889, and finished in 1906. Its entire length is sufficient to accommodate two 7000-ton steamers, and a third steamer of the same size can be loaded simultaneously at a timber dock, constructed as a temporary accessory, because the permanent dock could not be finished in time

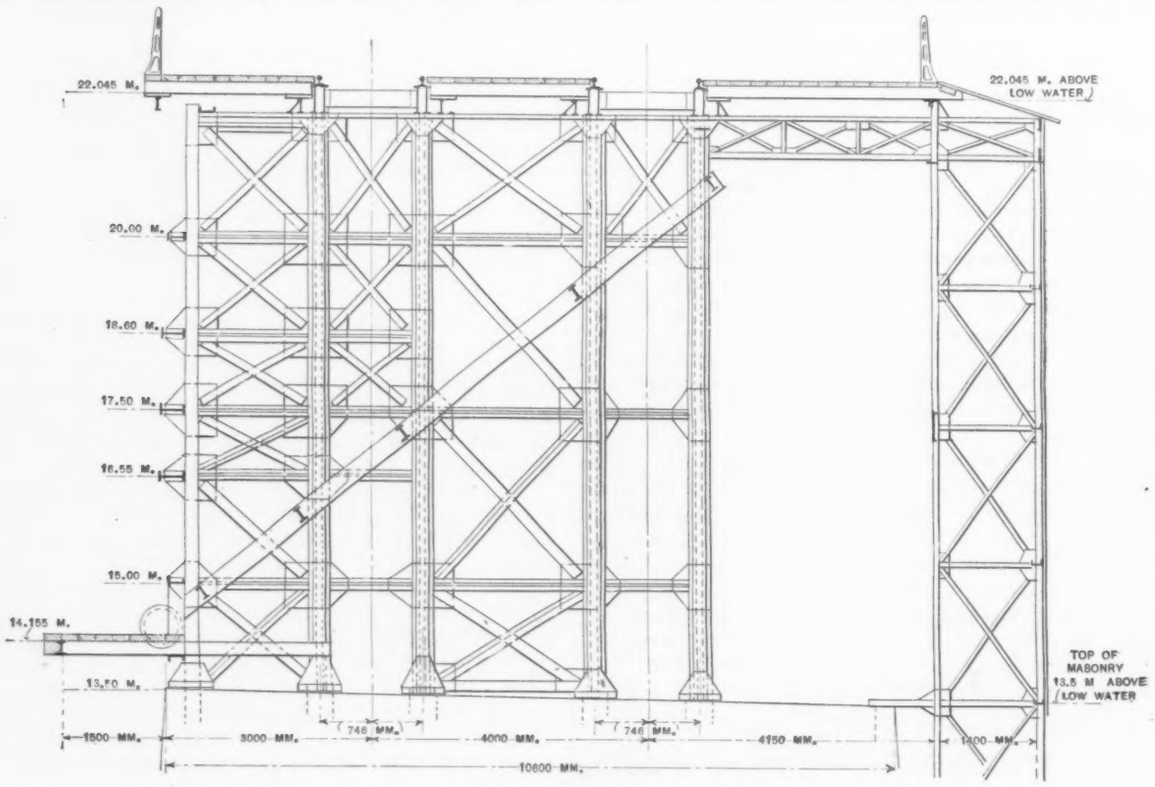


Fig. 5.—Vertical Section Showing Construction of Pocket Partition Walls.

for the opening of traffic in 1903. This dock will be retained. As the switching yard is at a level with the ore dock approaches are unnecessary.

With the present dock accommodations, about 20,000 tons of iron ore could be shipped daily from Narvik, an aggregate of 6,000,000 tons in 300 days, if vessels were always available, but, as stated above, the quantity to be carried on the railroad is limited to a maximum of 3,300,000 tons per year.

Steamers do not arrive in the harbor at regular intervals, and to meet emergencies in mining and transportation it has been found necessary to stock about 500,000 tons of iron ore at Narvik. To deliver ore on the stock pile at least expense a high level track is being constructed 44 ft. above low water, the stock yard being 75 ft. above the same level. From this track ore is to be dumped from cars coming from the mines on stock piles, from which it is taken by steam shovels when required for vessel cargoes. Only a small portion of the ore, however, has to pass to the stock piles, for as a rule the ore cars from the mines are taken direct to the dock.

The Narvik ore dock has cost about $1,000,000, and the entire expenditure for work carried out at Narvik by the Luossavaara-Kiirunavaara Aktiebolag amounts to $2,160,000, including the switching yard (10 miles of track), ore dock, stock pile yard, repair shop, coal handling machinery, &c.

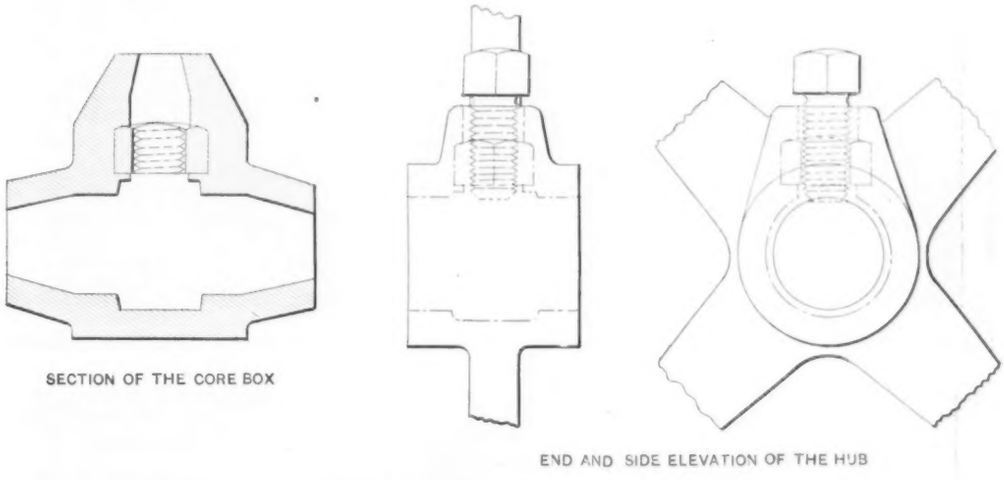
But little of the work was done by day labor, nor was it contract work, as understood in the United States. For such as was done on time allowance the prevailing rates were 10 cents per hour for unskilled and 15 cents per hour for skilled labor. Better wages, however, were earned by the system which was employed and which may be classed as piece work. Groups of men combined to excavate earth or rock, form embankments, carry forward submarine blasting, construct masonry, &c., at fixed prices per cubic meter. The compensation was divided among the individuals of the group, the foreman receiving an amount in excess of the others.

The tools used were supplied by the company, but charged to the employees, who were subsequently credited with the portions returned. Explosives were also furnished by the company at prices which limited their use to what was necessary to remove the rock without damage to the work under construction. Cement of Norwegian and German manufacture was furnished by the company, its cost during the time of construction approximating $2 per barrel.

The Berlin Construction Company, Berlin, Conn., has established a record of construction in bridge work. Recently a wooden bridge at Hartford, Conn., leading from Mulberry street to Bushnell Park, became unsafe and was closed to travel. At 5 p.m., December 11, the city awarded the contract to the Berlin Construction Company to remove the old bridge, repair the masonry, and build a new steel bridge 105 ft. long in 14 working days. The shop drawings were completed and approved by the city engineer December 12, at 4.30 p.m., and on December 14, at 11 a.m., the steel work of the entire bridge was loaded ready for shipment. On December 16 the erecting gang from Berlin started to tear out the old bridge, and on December 20, at 5 p.m., the entire work was completed and the bridge open for travel, only eight working days having elapsed after the contract was awarded.

Casting a Nut in a Pulley Hub.

An ingenious and economical substitute for drilling and tapping a hole in a casting is the method recently patented by the B. F. Barnes Company, Rockford, Ill. Briefly, it consists of casting a threaded nut in position in a pulley hub or similar part, so that the more laborious, less convenient and slower operation of later handling the casting to drill and tap a hole for a set screw is done away with. The nuts can be very cheaply and rapidly made or even purchased in bulk ready to use, and can be incorporated in the castings with practically no additional foundry work, and a very material saving in small drilling and tapping operations can thus be effected.



Details of a Means for Casting a Nut in a Pulley Hub to Take the Place of a Tapped Hole.—Patented by the B. F. Barnes Company, Rockford, Ill.

The illustration shows the scheme very clearly. At the left is a section of the core box for a pulley casting with the nut placed in position ready for the core to be formed through it. The core with the nut intact is then transferred to the mold, and the finished result is seen in the end and side elevations of a pulley hub shown at the right in the illustration. Another advantage of the scheme is that it does away with the necessity of drilling through the rim of the casting and into the hub. Where a pulley is of large diameter taps are frequently broken in performing the tapping operation, and this annoyance is avoided.

The device is applicable to a great many castings, such as cone pulleys, sheaves, hangers and even larger castings, and will have its principal utility in embodying threads in locations where it would be difficult to drill and tap the finished castings. The nut is held securely in the core box, insuring its being accurately placed in the core, and the core material protects the thread from being injured by the hot metal while the casting is poured. Still another advantage of the device that suggests itself is that the thread may thus be formed of wrought iron or soft steel which would be stronger than a thread cut directly in the cast iron. The nut might be thus formed in a casting of either gray iron, malleable iron, brass or steel. At present the scheme is employed in a great many operations in the company's own shops. Nuts are cast in the hubs of tight pulleys, cones, hanger castings and also in several places in the base casting of drilling machines, where they have been found to be thoroughly practical and effective in every way.

Two New Lapointe Broaching Machines.

Important developments in broaching machine design and practice have been made by the Lapointe Machine Tool Company, Hudson, Mass. As a result a method of machining metals formerly little used promises to become more common, especially where holes of unusual shape are to be cut. The company's first broaching machine was designed for small work only, but the demand has caused advances in size and power until the No. 4 machine was built, which broaches a hole 8 in. square, 12 in. long in a steel casting, the task being the more difficult because the hole is tapered.

The machine works on the principle of pulling the broach through the hole. It is held in an adjustable sliding head operating in ways and pulled by a heavy screw. The driving nut is keyed to a sliding clutch which engages either the driving gear for the cut or a friction that reverses the movement of the head, returning the broach or cutter ready for the next piece of work. The driving gear pulls the screw during the cut, the drive being positive by means of pins in the clutch and gear. The sliding head carries a finger which coming in contact with a collar mounted on a sliding rod on the back of the machine acts as a stop, disconnecting the clutch from the driving gear and placing it in its neutral position. To secure the quick return the operator must throw in the friction by means of a lever.

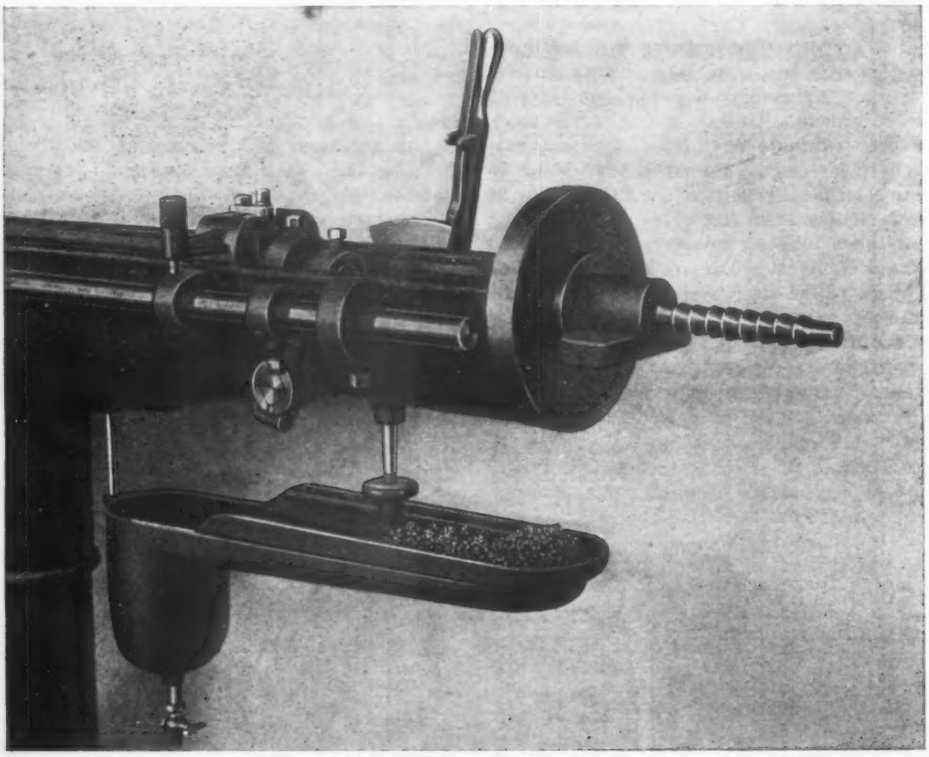


Fig. 1.—Detail of a No. 4 Broaching Machine Built by the Lapointe Machine Tool Company, Hudson, Mass.

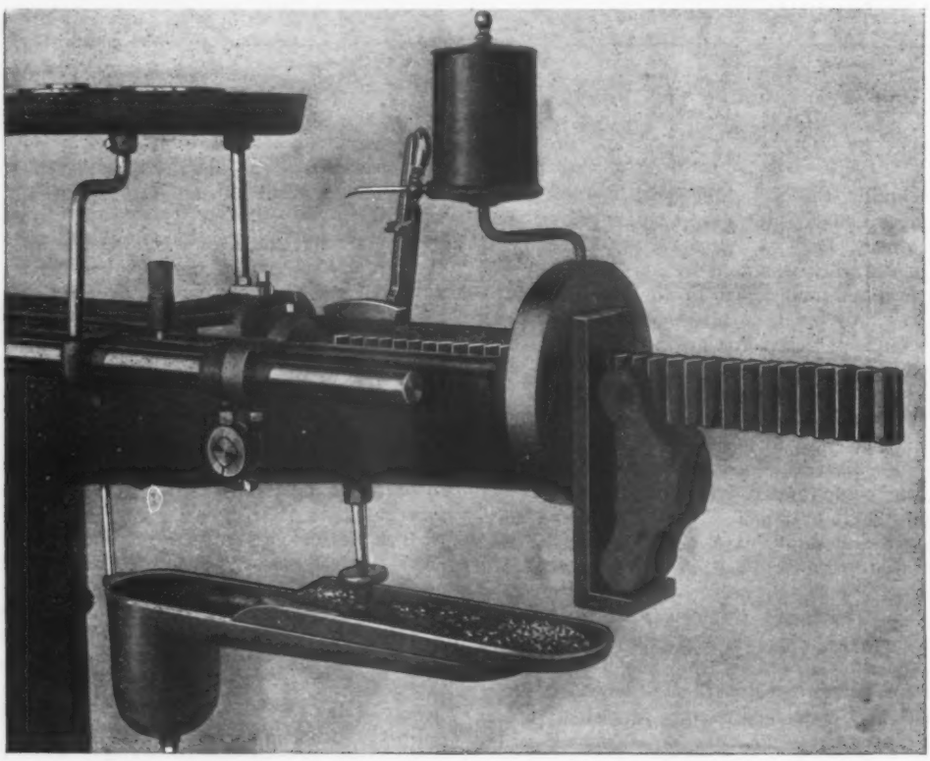


Fig. 2.—A Similar Detail of a No. 4 Lapointe Broaching Machine Performing a Different Operation.

The machines shown in the illustrations are equipped for special kinds of broaching, though they are essentially the same as the standard tools. In Fig. 1 a 1½-in. bearing is being broached instead of reamed, in a casting of peculiar shape, rendering it difficult to hold in a chuck. The hole is first rough drilled in a drill press or other machine, 1-32 in., or even 1-16 in. smaller than finished size. The broach, in its single passage through the hole finishes it to size, with a smooth and perfectly cylindrical interior surface. The broach is made in tapering form so that the first and each succeeding tooth takes only its proportionate share of the work, a few thousandths of an inch, until the extreme end of the broach is reached, where the last few teeth are of the full size required for the hole, this larger end being accurately ground to standard size. It has been found that a broaching tool is more durable than a reamer, and there is a saving of time. This includes setting up the work. It will be seen in the illustrations that no clamping or fastening is needed to hold the piece while broaching. The approximate time required for one piece is about one minute.

The second illustration, Fig. 2, shows a machine broaching a slot in a casting of peculiar shape, instead of milling it, a process that is very accurate as well as rapid, especially because no fastening of the work is required during the actual operation.

An important field of work for the broaching machine is that of cutting square holes and holes of shapes other than round. Square holes are replacing keyways because they can be cheaply broached. In producing such a hole a round hole is first drilled, no larger and if anything smaller than any side of the finished broaching. For instance, a 1¼-in. square hole is drilled 1-64 in. small. The neck of the broach is made to fill the drill hole, and the tool is of such a shape, as in the round broach, that each tooth in succession does its share of the work, the last of the series being of the required finished size. In cutting keyways the broach is carried on a bushing, so-called, which fits the hole in the work and acts as a guide, the final teeth of the tool giving the finished depth. When necessary a deeper keyway may be cut with the same broach by placing a block or key between the bottom of the bushing and the bar.

The Tin Plate Industry in Canada.

The new tin plate factory at Morrisburg, Ontario, which began work in the closing days of 1907, will have for some time to come two claims to distinction. It is the first tin plate factory established within the Dominion of Canada, and it is the only manufacturing industry that is without either protection in the Dominion tariff or bounties from the Dominion Treasury. It is not the fault of the promoters of the new factory that it is in its present isolated position as regards the tariff. Its output has no protection because, in 1906, when the Canadian tariff was revised, the Dominion Government feared the opposition of the farmers of Ontario, the fruit and vegetable canners of that province, and the fish packers on the Pacific and Atlantic coasts.

Work on the plant at Morrisburg had only recently been begun at the time of the last tariff revision. Municipal aid had been given to the undertaking by the town of Morrisburg, and there had been application to Ottawa for free water from a Government canal in the neighborhood of Morrisburg. This application was reported in the newspapers all over Canada. Farmers and canners thus had warning that the new company would seek for tariff protection when the act of 1897 was revised, and without waiting for the Morrisburg company to put in its plea, the farmers and canners lined up in opposition and urged that there should be no change in the tariff.

Tin plate was put on the free list in 1884. From 1879 to 1884 it had been in the protective schedules. The Morrisburg Company waited until the Tariff Commission was nearing the end of its six months' work before it presented its case. Its representatives appeared at the last of the public sessions of the commission—at Ottawa in February, 1906—and asked for a duty of 35 per cent., laying much emphasis on the fact that the promoters were starting a new industry, and that the municipality of Morrisburg had come to its aid. It was November, 1906, before the new tariff was submitted to the House of Commons. Concessions were then made to many of the industries which had pressed for higher duties against American and British imports. The bounties to the iron and steel plants were also continued until 1912, but no concession of any kind was made to the Morrisburg industry. The company's application for Government aid could not be ignored altogether. It had attracted too much attention to admit of its being passed over in silence by the Minister of Finance, who, on the contrary, explained at some length why it had been turned down, and why tin plate was to continue on the free list. Mr. Fielding then said:

> Very strong representations have been made to us to put a duty on tin plate in order that we might manufacture it in Canada. There is certainly no difficulty about manufacturing all the tin plate we want in Canada if we are prepared to pay the price, and some enterprising gentlemen have already taken steps to establish a factory in some town in eastern Ontario. We say at once that while it would be a desirable thing to have a tin plate factory in Canada or any other factory that will give employment to the people, what we have to consider is whether the advantages to be derived from establishing an industry of that character are at all equal to the burdens that would be imposed on the mass of the people by its establishment.
>
> Tin is an article which enters into the industries and domestic life of the people to a very large extent. Its price affects the price of home utensils and of dairy utensils in a very large degree, and the tremendous canning industry we are building up—an industry to which we are looking with pride and satisfaction and hope to see very largely developed. This canning industry is a vast one; and I think it would be a mistake if because of this idea of making things in Canada, or even for the establishment of a factory, important as this might be to the locality in which it was situated, worthy as the enterprise might be and commendable as might be the spirit of the gentlemen who would undertake it, we should cultivate that industry by putting a heavy burden upon all this varied range of industries that require tin. And therefore we are not prepared to put a duty on tin plate.

Canada is now importing annually a little over 452,000 boxes of tin plate, of which, in 1906-7, 351,000 boxes were obtained from England and a little over 100,000 boxes from the United States. There is plenty of business in sight for the Morrisburg plant, but it will be hard sledding for the new concern to get its full share as long as these large importations are coming in and tin plate remains on the free list. It is scarcely possible, however, that the peculiar position of this pioneer plant will be permanent. In the past, tariff duties have been established in Canada to help the smallest industries. At one revision, when the Conservatives were in power, all importations of parasols and umbrellas were made liable to a stiff duty in the interest of a single umbrella shop in Toronto. There are many similar instances in the tariff history of Canada, and as recently as the last revision a duty on essence of peppermint was established in the interest of a small distillery at Windsor, Ontario.

Both political parties are now protectionist. Both have hitherto been equally alert in bringing new industries inside the tariff breastworks. The attitude of the Laurier Government is illogical and without precedent, and it will need only a little more pressure to secure either the benefit of the tariff or of the bounty code for the Morrisburg enterprise. The likelihood is that tin plate will be added to the bounty list before the next general election comes around. Such a policy on the part of the Government would disarm the opposition at least of the canners and packers. It would, moreover, obviate any disturbance of the export trade in canned goods and the necessity of establishing a system of drawbacks on tin plate in favor of exporters of canned goods. E. P.

The West End Tube Works, McKees Rocks, Pa., has issued a circular stating that with greatly increased facilities, additional equipment and arrangements insuring a steady and ample supply of skelp, it is in good shape to handle promptly a larger volume of business. The company manufactures welded bending tubing, running from ⅝ to 2 in. outside diameter, which is uniform in size and finish and of a quality to work satisfactorily. Within a short time the company will be prepared to furnish square tubing in sizes ⅝ x ⅝ in. up to 2 x 2 in., either hot finished or smoothly cold drawn. The company makes a specialty of cutting tubing to short lengths, but does no threading.

A Canadian Time Keeping System.

Employed by John Bertram & Sons Company, Dundas, Ont.

BY J. A. THOMPSON, DUNDAS, ONT.

The time system in use at the Canada Tool Works, John Bertram & Sons Company, Dundas, Ont., is so arranged that each man keeps his own time, not for only the day, but for each individual job. On a time register, placed in a convenient position in the section or department in which he is engaged, he registers his time of commencing and leaving off work for the day; then on a daily time card he registers the time of commencing and leaving off each job or operation during the day.

The time card has spaces to be filled in with the workman's clock number, his name, the number of the order, number of the machine, and also the number of the part upon which he is at work, as shown in Fig. 1. When he starts an operation, in this case turning, he marks the time card with a check mark under the hour when he commenced the operation, (*e. g.*, 7 a. m.), proceeds with the work and when finished (say at 11.15 a. m.), places a cross under the hour and also beside the nearest fraction of an hour as measured in quarters in the line headed "Minutes." The lapsed time (4¼ hr.) is entered on the lower right hand corner of the card under "Hours on Job," as is also shown in Fig. 1. The operator then proceeds with his next job, this time marking the time of beginning on another card (only one entry is made on each card), with a check as before. A card succeeding that of Fig. 1 is shown in Fig. 2, where checks are placed under hour XI and also in front of minute 15. If the job on which he is working is not completed at the close of the day, he marks his card as though it were finished at the closing time, entering the hours occupied during that day, and on the following morning a new card is used as though commencing a new job.

There are many jobs that occupy but a small amount of time, possibly only 5 min. The wish is to keep a record of these, but not to charge less than 15 min. against any one job; hence if two or more jobs are done in the 15 min., the time of commencing and leaving off will be the same on each, but the time cards for the second or more jobs done within the 15 min. must be marked "With No.——" as in Figs. 3 and 4. It will be seen that provision has been made for men running more than one machine to record the actual time running each machine.

All time cards are returned to the time department the following morning, where they are checked with the time register, then sorted in their respective operations and listed on a summary sheet, Fig. 6, with a Burroughs adding machine, which lists the hours according to the order numbers. This sheet also gives the total hours of each operation for the day as well as the total machine hours. From each day's sheet are transferred to a time summary card, Fig. 5, for each order number, the hours spent on each class of work, as boring, turning, &c. This card shows the total number of hours that have been spent on a given order to date. To illustrate, it is compiled as follows: From the time summary sheet for Monday, June 10 (Fig. 6), is checked off order No. 2211, and on the time summary card (Fig. 5), under week ending June 15, are entered forging, 2¼ hr., boring, 4½ hr., turning, 12½ hr., and so forth. The entries from Tuesday's sheet are totalled with the previous entry, *e. g.*, if there was 4 hr. under forging, there would be entered under Tuesday, 6¼ hr., for this would be the total to date for the week, and so on for the remaining days of the week; each operation is carried out in like manner. The week's operations are totaled, giving total hours on the order up to that point. It is to be noticed that the daily entries for the next week begin anew, but that the totaled hours for the previous week are added in the second week's totals. These time summary cards are continued until the order is completed, and the cost is made up from the information they give.

A glance at this card always indicates the total hours to date of any operation or the total time to date of any order in process of manufacture in the works. Another advantage is that comparisons may be made with former orders at any stage in the process. This information also saves much time when making up the inventory when required, as the necessary information is immediately at hand.

A premium system is also carried on which is prov-

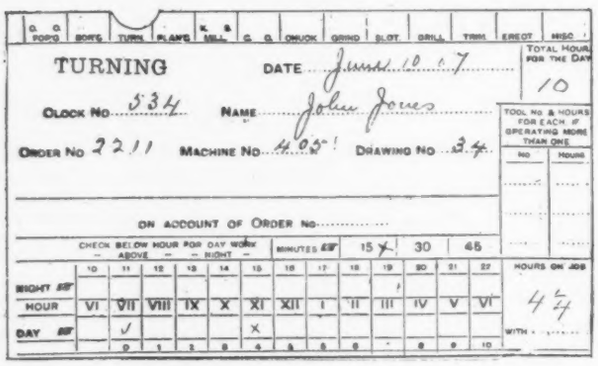


Fig. 1.

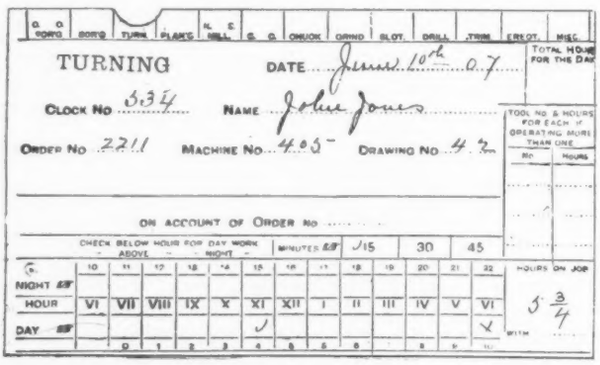


Fig. 2.

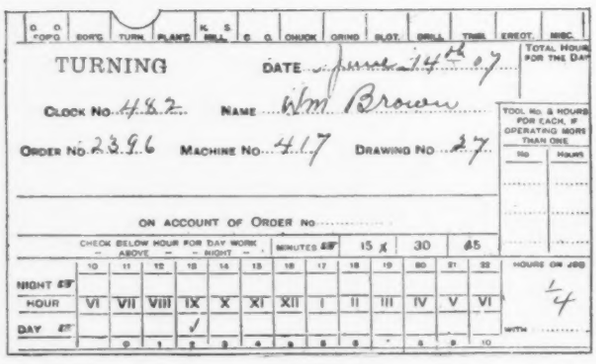


Fig. 3.

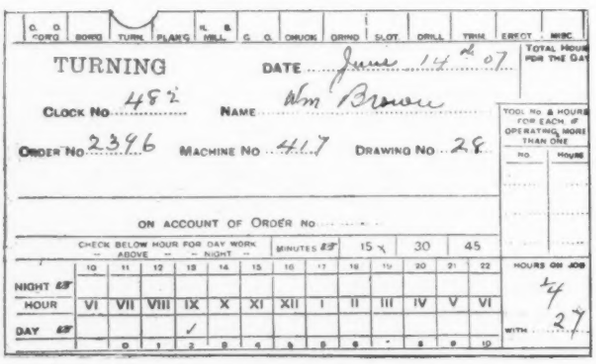


Fig. 4.

Facsimiles of Time Cards for Individual Turning Operations.—Actual Size of Cards, 3 x 5 In.

ing very satisfactory, as it appeals to the individual workman who is willing to exert himself, and the company profits in the increased production.

Iron Ore on Lake Erie Docks.—Figures compiled by the *Marine Review* show that the receipts of iron ore at Lake Erie ports in the season of 1907 were 35,195,758 gross tons. The total shipments from Lake Superior docks, as heretofore given, were 41,288,755 tons. The stocks of ore on Lake Erie docks December 1, which for statistical purposes is the date taken for the close of navigation, amounted to 7,385,728 tons, the largest total for dock stocks at the end of the season in the history of Lake Superior ore shipments. As winter shipments from docks to furnaces will be light in 1908, the opening of navigation next spring will probably show a high record figure for stocks on dock. It is safe to assume that in most cases the stocks of ore now in furnace yards will be sufficient for the requirements between the present date and the opening of navigation. In many cases they will be much more than sufficient according to the present outlook.

ORDER NO. 2211 — DESCRIPTION: Bertram's 30" Wheel Lathe (Motor Driven) — TIME SUMMARY — DATE OF ORDER: May 30th 07 — CARD NO. 1

CLASS OF WORK	HOURS WEEK ENDING June 15/07 MON	TUES	WED	THURS	FRI	SAT	TOTAL TO DATE	HOURS WEEK ENDING June 22nd 07 MON	TUES	WED	THURS	FRI	SAT	TOTAL TO DATE
FORGING AND CUT OF	2 1/4	6 1/4	·	9 1/4	13 3/4	18 3/4	18 3/4	4	11		16	21		39 3/4
BORING	4 1/2	5 1/2	7 1/2	9 1/2			9 1/2	3 1/4				13 1/4		22 1/4
TURNING	17 1/2	16	30	35 1/2	36	40	40	15 1/2		16 1/2		26 1/2	43 1/4	83 1/4
PLANING	15	28			41	54 1/2	54 1/2			4	17	19	24	78 1/2
MILLING & KEY SEATING	4		5			5 1/2	5 1/2						12 1/2	18
GEAR CUTTING	1 1/2						1 1/2	8 1/2						10
TRIMMING	1/2						1/2		1 1/2		5			5 1/2
GRINDING	1/2						1/2		1					1 1/2
SLOTTING	3	6 1/2				8 1/2	8 1/2			1/2		4		12 1/2
DRILLING	5	13	14		15	19	19				2	11	2'2	41
CHUCKING	1 1/2				11 1/2		11 1/2	1 1/2		5			6	17 1/2
ERECTING	15	22	47		70	92	92			10		20	95	187
TOTAL HOURS ON ORDER							261 3/4	TOTAL HOURS ON ORDER						517 1/4

Fig. 5.—Facsimile of Time Summary Card.—Actual Size, 5 x 8 In.

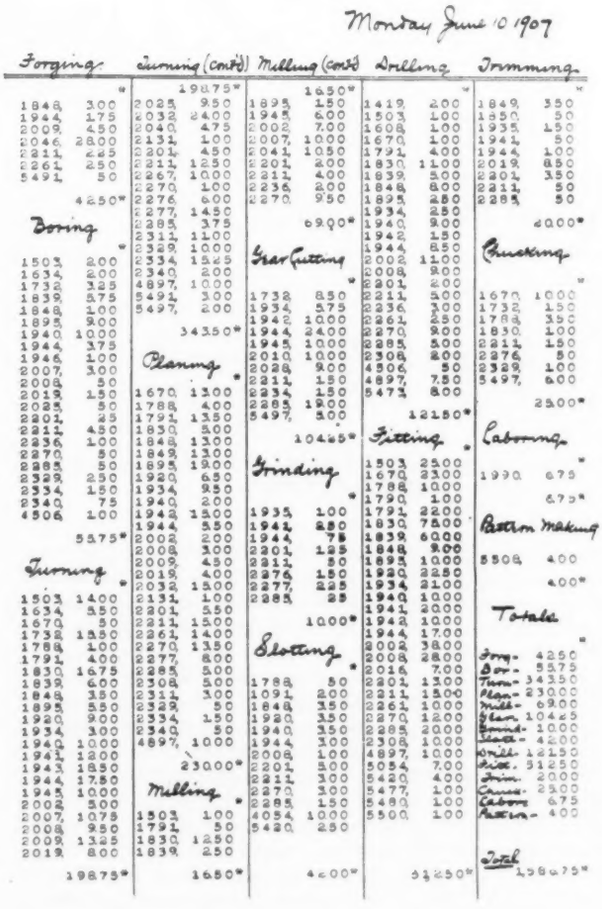


Fig. 6.—Reproduction of Summary Sheet Made on an Adding Machine.

The Westinghouse Machine Company Receivership Plans.

Last week plans for taking the Westinghouse Machine Company out of the hands of the receivers—William McConway, W. H. Donner and E. E. Keller—were sent to the creditors. These plans consist briefly in a proposal to issue three-year 6 per cent. notes to pay off the existing indebtedness, these notes to be secured by the company's bonds at 85 per cent. of their face value as collateral, and issued in denominations of $500 or multiples thereof. Claims of less than $1000 are to be paid in cash. The plans are said to have the indorsement of some of the best financiers in Pittsburgh. From an accompanying financial statement the following schedule of liabilities as of October 23 is taken:

Capital stock	$7,373,450.00
Funded debt:	
First mortgage bonds	245,000.00
Debenture certificates	1,020,000.00
Current liabilities:	
Notes payable	5,943,528.49
Current accounts (including payrolls, &c., amounting to about $225,000)	1,874,142.95
For inventory depreciations and extraordinary adjustments	200,000.00
Profit and loss surplus	6,687,303.51
Total liabilities	$23,343,424.95

On October 23, 1907, the company had paid in advance interest charges amounting to $103,142.15, being the interest from October 23 until maturity on notes discounted. This amount has been deducted from the surplus account in the above statement.

Current liabilities as above, $7,817,671.44, will be reduced to an amount less than the $7,200,000 of three-year notes proposed to be issued, by "set-offs" in accounts receivable and the payment by the receivers of preferred claims in the nature of payrolls, &c.

The Pennsylvania Engineering Works, New Castle, Pa., builder of blast furnace and steel plant construction, has received a contract for the building of a blast furnace for the Keystone Construction Company, at Hamilton, Ohio.

The Nisbet Dust Catcher, Gas Washer and Reheater.

The dust content of blast furnace gases will vary from 2 to 5 grains per cubic foot, and assuming the average at 3 grains per cubic foot, a furnace giving off 125,000 cu. ft. of gas per ton, which is a fair average in present practice, would carry over 375,000 grains, or 53.5 lb., for every ton of iron produced. The amount of water vapor carried over varies according to the amount of moisture in the burden. By eliminating the dust and water vapor from the gases it is possible to dispense with the use of one stove and at least one spare boiler, and also, as the purified gases have a higher calorific value, there is a saving in coke because of the hotter blast that is possible by use of the purified gas.

It is obvious that the only practicable way by which the water vapor can be eliminated economically is by cooling the gas to a point where the vapor will be condensed; that the simplest condensing medium is water, which is also the logical medium for washing the gases to eliminate the dust particles, and, further, that the greater the washing surface the more thoroughly the gases are purified.

The apparatus shown herewith, designed by D. F. Nisbet, consulting engineer, Pittsburgh, comprises a dry dust catcher, which may be supplemental to an ordinary dust catcher already installed, or may be used as a primary dust catcher, a gas washer, cooler and reheater. The hot unpurified gases enter the dust catcher element, as in Fig. 1, where the velocity of flow is reduced, permitting the heavier particles of dust to fall by the action of gravity to the lower portion of the apparatus, where it impinges on the surface of the water in the bottom tank and is intercepted. The deflecting diaphragms in the dust catcher element guide the dust to the center of the lower passage, so as to prevent the "short circuiting" of the dust laden gases, and cause them to impinge more directly on the water. The gas, now deprived of the heavier portions of the dust, is divided into two streams and is carried along the surface of the water, in the tank element, as shown by the arrows, and enters the outer washing and cooling passes. At the tops of the latter are perforated water pipes, which deliver a thin sheet of water downward to the tank, while the gases flow upward. This passing of the gases in a direction opposite to the flow of water has a tendency to cause the gases impinging on the water, through frictional contact, to take the direction of the flow of water, giving the gases a rolling motion. This brings them into intimate contact with the wetted surface, which will rapidly absorb the heat of the gases, at the same time intercepting the finer dust particles and carrying them into the tank below. In the three-pass apparatus, shown in Fig. 1, the gases, after passing upward through the outer passes, descend along the center passes, where they are further cooled and purified; then pass into the inner reheating passes on either side of the dust catcher, and thence to the upper reheating pass and to the stoves and boilers. In the single pass washer, a section of which is shown in Fig. 2, the gases go direct from the one washing and cooling pass to the reheating pass over the roof of the dust catcher element, where the hot unpurified gas gives up some of its heat by conduction to the purified gas.

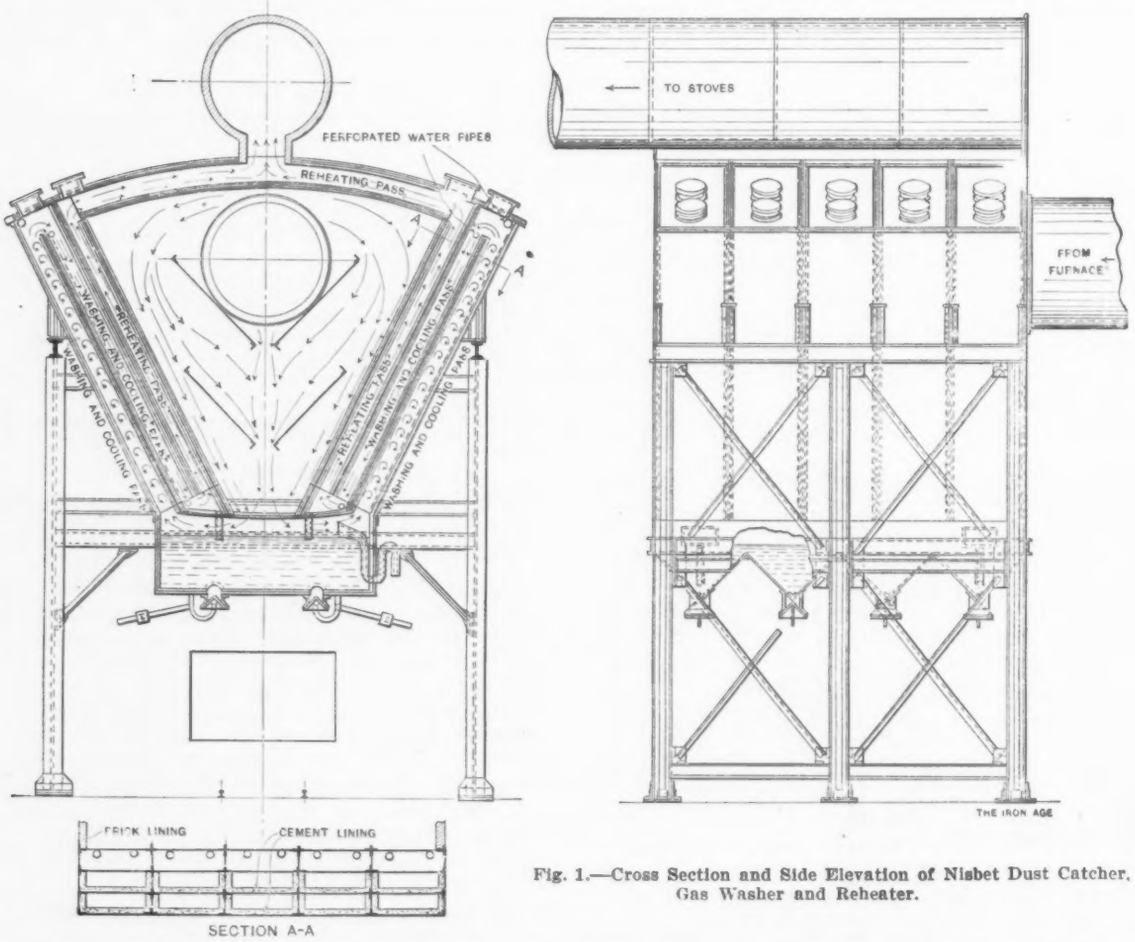


Fig. 1.—Cross Section and Side Elevation of Nisbet Dust Catcher, Gas Washer and Reheater.

It is obvious that since the purity of the gases depends on the extent of the washing and cooling surfaces, the three-pass apparatus has a much greater efficiency than the single pass; therefore the choice of apparatus for a given installation would depend largely on the dust content of the gases and other economic considerations.

Where these washers are to be used in conjunction with other apparatus, as a preliminary to further purification of the gases for use in gas engines, the washing and cooling surfaces can be greatly augmented by placing perforated pipes at the sides and end opposite the intake of the dust catcher element. It will be noted that the wash water is practically used twice, once in oblique passages and again in the tank, thus making it very economical in the use of water. The tank, as will be seen, is divided into four compartments, each of which is provided with sludge gates for drawing off the accumulation of dust which settles to the bottom. Each compartment can be drained and thoroughly cleaned without materially affecting the efficiency of the washer, pro-

viding this is done rapidly. Provision has also been made for taking care of the overflow and skimming the surface of the water in the tank.

The designer of the apparatus is negotiating with several large steel companies for its installation at their plants in the near future.

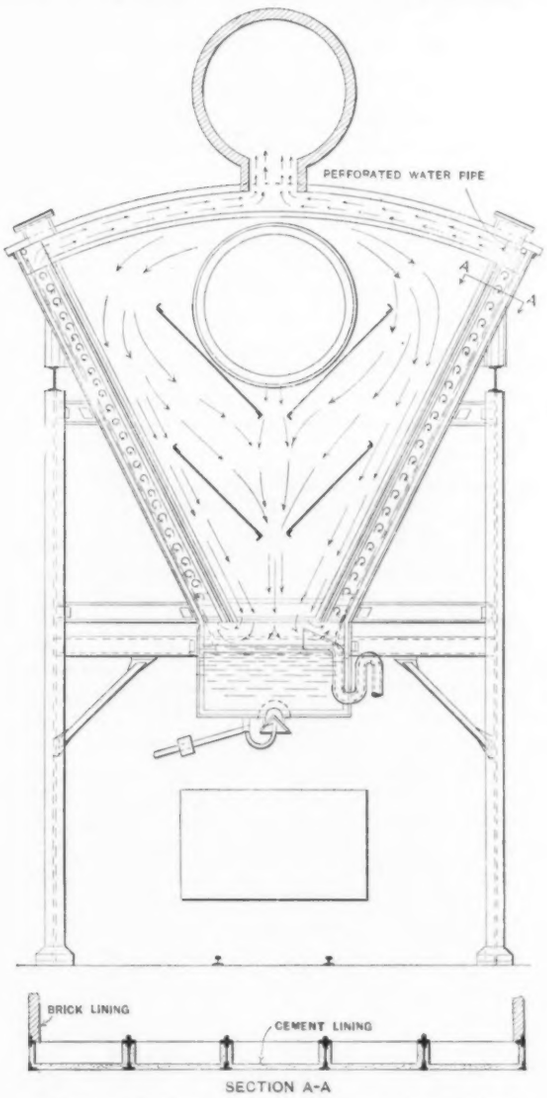


Fig. 2.—Section of the Single Pass Gas Washer.

Customs Decisions.

Burnt Iron Annealing Pots.

The Board of United States General Appraisers January 4 ended a long drawn out customs controversy regarding the classification to accrue on old burnt iron annealing pots, when it was decided that the articles come within the purview of "scrap iron," as that term is used in the tariff act. This classification was imposed by the custom house authorities at Buffalo, and carries duty at the rate of $4 per ton. The Pratt & Letchworth Company, the importer of the merchandise, objected to the return made by the collector, and filed an appeal with the Board of Appraisers, in which it was alleged that the articles should be deemed "non-enumerated manufactured articles," with assessment at the rate of 10 per cent. ad valorem. The board, in its written opinion, characterizes the claim as wholly untenable. In part, the decision says:

The merchandise is admitted to be old burnt and worn iron articles. In our opinion they are provided for in paragraph 122 of the tariff, as scrap iron. The importers contend that the old iron annealing pots are to be used only as an ingredient or sort of flux, in the manufacture of pig iron, and that such use is not a process of remanufacture. Their case thus rests on their claim that, as the proviso to paragraph 122 limits the application of the term scrap iron, "nothing shall be deemed scrap iron or scrap steel except waste or refuse iron or steel fit only to be remanufactured," the goods they have imported do not fall within it, and are dutiable under section 6 of the tariff. We regard that claim as wholly untenable. When an article, such as a metal worn out by use and no longer fit for the use for which it was made, is thrown into a melting furnace, it certainly is being subjected to a process of remanufacture. It does not matter that the articles are to be melted with other metals so as to form an alloy for some specific use, the process is a process of manufacture and the reuse of old material accordingly makes it a process of remanufacture. . . .

To sustain the importers' contention would result in holding that no metal is subjected to process of manufacture or remanufacture unless made directly into the form of completed articles. This old scrap iron is to be put in the furnace for the purpose and with the object of combining itself with the other materials present and thus to form the ultimate product. This use is a remanufacture in every sense of the term so used. We hold that these old iron annealing pots are refuse iron, and that they are provided for under paragraph 122 as scrap iron, and are properly dutiable as assessed. The protests are overruled and the decision of the collector in each case is affirmed.

Lead in Pigs.

The board has made a decision overruling the claim of Arthur Seligmann, New York, for a reduction of duty on merchandise described by the appraising officers as "lead in pigs." Duty was accordingly assessed at the rate of 2⅛ cents per pound, whereas the importer set up the claim for classification as "type metal," with a tax of 1½ cents per pound for the lead contained therein. In order to sustain his claim, the importer was obliged to show affirmatively that the pigs of antimonial lead or type metal contained at least 9 per cent. of antimony. According to the appraiser, the pigs contained only 7.10 per cent. of the antimony, and upon analysis this return was confirmed. The decision says:

The burden of proof is upon the importer to establish his claim by a preponderance of evidence, otherwise the action of the collector is presumed to be correct. The importer has introduced in evidence certain *ex parte* affidavits in regard to an analysis of samples which are claimed to represent the antimonial lead imported. The affidavit of the manufacturer recites that there were "three meltings in all to produce the 173 pigs." One pig out of each melting or three in all were remelted and sample sticks poured or cast and these submitted for assay. The *ex parte* affidavit as to said assay shows a presence of 10.52 per cent. of antimony. That the amount of antimony in any given melting varies is testified to by the importers' own witness. There is no proof presented as to what each melting assayed, or as to how many pigs were poured from such respective melting, and consequently no proof that the samples taken are representative. It is not sufficient to indicate that certain tests made of samples from meltings prior to the actual casting of the pigs might afford a fairer basis for computing the amount of antimony than a test by the Government of the precise goods imported. It might be a fairer test of the meltings and still not a representative test of the 173 pigs of metal here in question.

We are not satisfied with such proof, and think the protestant has failed to furnish the best evidence. It may be well to point out that the importer admits that he was acquainted with the fact that his importation would be sampled and he had ample notice that two pigs had been taken by the collector which would be subjected to an analysis or assay by the Government, the results of which would determine the classification of his goods. Knowing this, no reason is advanced why he could not have retained adequate and representative borings of a sufficient number of the pigs of metal that arrived, an analysis of which would properly have determined the issue beyond question. The record does not in our opinion show the importers' claim to be established by a preponderance of the evidence, and we must therefore hold that the goods are properly dutiable as assessed. The decision of the collector is affirmed and the protest overruled.

Finished Machines.

A decision has been handed down by the board overruling a claim filed by Robert Reiner and others of New York. It is held that fully finished machines must pay duty at the rate of 45 per cent. ad valorem under the provision for "manufactures of metal." Several claims for lower rates than that assessed were made, but as the importers failed to produce any testimony on the trial in favor of their allegations, the board is obliged to overrule the claims. Another firm making a similar claim was Sidney, Blumenthal & Co., New York.

Lee C. Moore, Clarence E. Swanson and David S. McCann will apply for a charter on January 20 for an intended corporation to be called Lee C. Moore & Co., Inc., to conduct a general engineering and construction business, and will take over the business formerly conducted by Lee C. Moore, Fulton Building, Pittsburgh, Pa.

The Stewart Gas Furnace.

For the successful hardening of high speed tool steel the maintenance of a uniform temperature and non-oxidizing heat is absolutely essential. To obtain the best results with steel of this character it should be heated slowly up to 1600 degrees F., from which point onward

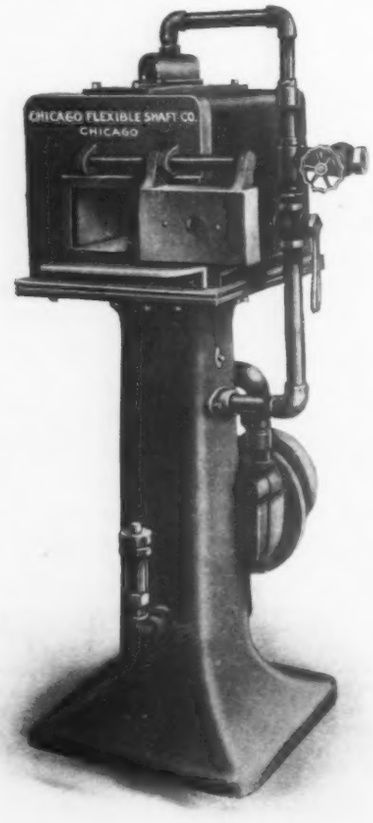


Fig. 1.—The Stewart Gas Furnace Made by the Chicago Flexible Shaft Company.

the faster the temperature is increased the better. The Stewart high speed steel furnace manufactured by the Chicago Flexible Shaft Company, Chicago, and illustrated in Fig. 1, is designed to accomplish these results, provision being made for the control and regulation of both the air and gas supply.

A small pressure blower attached to the back of the

Fig. 2.—Bench Pattern of the Stewart Gas Furnace.

cast iron column supporting the furnace supplies the air blast, which is conducted by a pipe at the rear to the furnace. The interior of this column is used as an air reservoir in which the desired pressure can be maintained by the proper adjustment of the relief valve located near the foot of the column in front. The inlet connection for fuel gas supply is at the globe valve on the pipe line at the right, through which gas is introduced into the top of the furnace. At the point of inlet is located an air and gas mixer and a stop cock in the air line just below it furnishes the means of control for the air blast.

Flames from two burners which are located in the top of the furnace chamber are deflected downward against the steel; this arrangement is designed to utilize to the fullest extent all the heat generated. It is stated that a non-oxidizing heat of 2500 degrees F. can be generated and maintained with absolute uniformity. The furnace chamber is provided with lining that will stand a temperature of 3000 degrees F., and is furnished with an easily operated sliding door. The size of the opening is 4 x 6 in., and the dimensions of the heat chamber are 10 x 7½ x 6 in. For the air line 1½ in. pipe is used, and for the gas supply 1¼ in. With all burners full open, the maximum gas consumption is 80 cu. ft. per hour. The furnace occupies a floor space of 21 x 29 in., and weighs 475 lb.

Fig. 2 illustrates the same furnace with short legs for mounting upon a bench. When used in this way a detached blower and reservoir is necessary. In other respects the equipment is the same as that shown in Fig. 1.

The Power Specialty Company, New York, manufacturer of the Foster patented steam superheater, states that notwithstanding the business depression which has been experienced during the past few months, it has entered a large number of important contracts since September, and that its business for 1907 shows a very gratifying increase in volume over any previous year. Present indications in the way of renewed inquiries and resumption of negotiations temporarily suspended by reason of the business depression, point to the closing of a large amount of business within the next few months. Among many contracts which have recently been secured are: Alabama White Marble Company, 600 hp.; Babcock & Wilcox, for Pensacola Navy Yard, 1600 hp.; United Shoe Machinery Company, 1032 hp.; Clark Thread Company, Newark, N. J., 2500 hp.; American Railways Company, 838 hp.; Louisville & Eastern Railroad, 600 hp.; Schlitz Brewing Company, 2000 hp.; Anheuser-Busch Brewing Association, 2000 hp.; Tonawanda Board & Paper Company, 900 hp.

In the ore traffic of the lakes in 1907 the vessels had an exceptionally easy season. Rates remained constant at the opening prices, which were the same as the previous year, and there were few marine disasters. The fleets were kept busy and some remarkable records were made. As high as 25 down trips with ore were made by ships carrying from 10,000 to 12,000 gross tons per trip. Single loads of ore were carried out of Lake Superior running to 13,136 gross, or 15,123 net, tons, and the average cargo of ore vessels plying to head of the lake ports increased to about 6500 gross tons. It is probable that these figures cannot be equaled in any other port in the world on salt or fresh water.

Robert W. Hunt & Co., inspecting and consulting engineers, Chicago, have decided to establish a branch office and chemical laboratory in St. Louis, Mo., to be under the charge of Charles W. Gennett, Jr., a Cornell graduate. He was for some time in the inspecting and testing department of the Southern Railway Company, and during the latter part of that connection was in charge of the company's inspection work in Pittsburgh and the West. Since then and up to the time of entering the service of Robert W. Hunt & Co., he has been the Western sales agent of the Atha Steel Casting Company, with headquarters in Chicago.

W. E. Shipley, Philadelphia, announces that the business heretofore conducted by him under his own name has been incorporated under the name of W. E. Shipley Machinery Company. Geo. A. Bauer, W. S. Hagaman and J. L. Stewart, who have been connected with the business for several years, are associated with Mr. Shipley in the incorporation.

The New Hanchett Automatic Saw Sharpeners.

At no time since saws have been manufactured have the mill men using the saws given such close attention to their care as at present. The Hanchett Swage Works, Big Rapids, Mich., manufactures a complete line of modern machinery for the care of saws to which the latest additions are the improved machines for sharpening saws automatically, herewith illustrated, of which Fig. 1 shows a rip and cross cut circular saw sharpener, and Fig. 2 a band saw sharpener.

Simplicity of construction, ease of adjustment, strength and durability have been aimed at in the design of these machines, and one of the most important results which is claimed to have been obtained is the elimination of vibration. This is absolutely essential in an automatic saw sharpener while in operation if even and uniformly ground teeth are to be the result. There are two features of these machines which together have made this possible. The emery wheel is driven direct from the countershaft which, unlike other machines, is located near the base of the machine instead of on the top, and the feed is obtained by means of a friction and disk instead of a gear and pinion, which is easily adjusted for any desired speed.

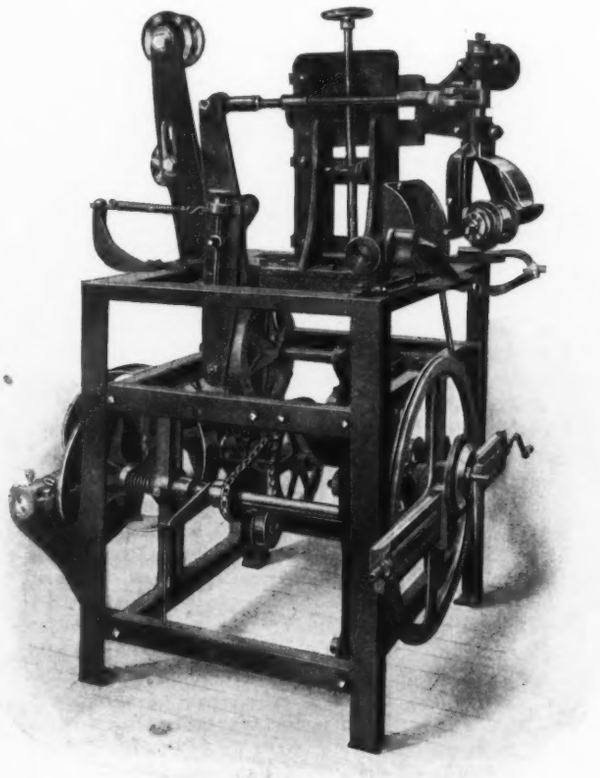


Fig. 1.—The Hanchett Automatic Rip and Cross Cut Circular Saw Sharpener.

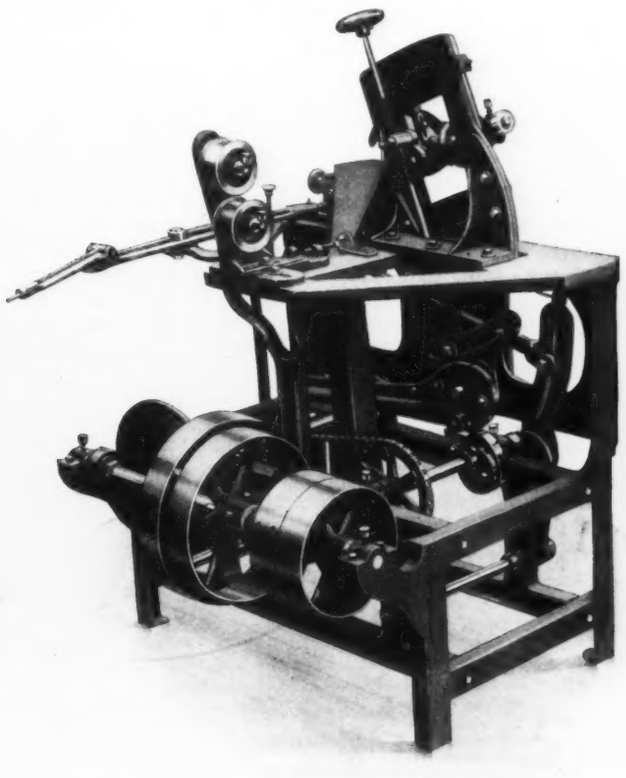


Fig. 2.—The Hanchett Automatic Band Saw Sharpener (Left Hand Pattern).

In the circular saw sharpener the work is held stationary, except while indexing, and the emery wheel is adjusted to it. Through a double head with vertical and cross slides controlled by screws and hand wheels, adjustment is made for depth of throat of the saw and lateral adjustment. Four different speeds are provided for the wheel, and the wear of its arbor is taken up by a thumb screw adjustment. The friction feed makes possible any number of strokes from 20 to 45 per minute, and the new feed motion gives strokes ranging from ¼ to 3 in. One adjustable cam with a graduated scale allows for any shape of tooth. Both sides of the saw can be bevelled, or the front can be bevelled and the back squared, or vice versa. The bevel on the saw tooth can be changed while the machine is in motion by means of a hand wheel, and a graduated scale indicates the exact degree of bevel, which ranges from 0 to 45 degrees. The sharpeners are made in three sizes, with or without beveling attachment. The latter can be omitted when rip saws only are to be ground. The three sizes have capacities, respectively, for 12 to 72 in., 10 to 50 in., and 6 to 24 in. saws, and weigh 1300, 1000 and 600 lb. respectively.

The band saw sharpener has a new improved back feed, one of the exclusive Hanchett patents, which eliminates a great amount of strain and lost motion that was very noticeable on the old line of sharpeners. Acting in conjunction with the front feed lever a positively uniform feed is maintained. Another special feature is an adjustable cam by the use of which any shape of tooth can be obtained quickly and accurately. The friction and disk feed gives a range from 18 to 40 teeth a minute. The emery wheel on this machine also has four different speeds, and may be adjusted to any angle from 0 to 45 degrees. Wear of the slide in the head is taken up by a gib. The automatic band saw sharpeners are made in both right and left hand patterns and in five sizes. The smallest takes 2 to 7 in. saws and weighs 650 lb.; the others in order have the following capacities and weights: 4 to 10 in. saws, 1200 lb.; saws up to 16 in., 1400 lb.; saws up to 18 in., 1600 lb., and saws up to 20 in., 1800 lb.

In addition to the automatic sharpeners referred to above, the company manufactures a complete line of filing room machinery, including saw stretchers, re-toothers, brazing tables, lap grinders, filing clamps, swages and swage shapers.

The affairs of the Northwestern Iron Company, Milwaukee, Wis., were turned over on January 2 to Ferdinand Schlesinger and his associates, the new owners, who proceeded with the election of the following officers: President, Ferdinand Schlesinger; vice-president, E. N. Dickson; second vice-president, Henry J. Schlesinger; treasurer, Armin A. Schlesinger; secretary, Jerome Havlisch; general manager, W. K. Packman. The directors are Ferdinand Schlesinger, E. N. Dickson, W. L. Brown, C. P. Wheeler and Henry J. and Armin A. Schlesinger. The general offices of the company will remain in Milwaukee, in the present quarters in the Colby & Abbot Building. Messrs. Brown and Wheeler are members of the firm of Pickands, Brown & Co., Chicago.

Lake Superior Iron Mining in 1907.

BY DWIGHT E. WOODBRIDGE.

The year 1907 showed iron ore shipments from the Lake Superior region amounting to slightly more than 42,000,000 gross tons, in comparison with 38,522,239 tons in the previous year. This new total was almost as much as the lake region shipped in the 35 years prior to 1890, and was more than double the business of so recent a period as 1901. The general average yearly increase has been well maintained, but, as has been the case after every period of augmentation, a decline is on, and the iron ore business of 1908 cannot fail to diminish from that of the past season. The same decline occurred in 1891 and 1893, in 1896 and in 1903 and 1904, the break from 1901 to 1904 having been almost 6,000,000 tons. It is quite possible that a decline proportionately as severe as that of 1904 will take place the coming year.

Figures for the various ranges show that the entire increase of the year took place on the Mesaba District. They give totals as follows:

	1905.—Tons.	1906.—Tons.	1907.—Tons.	Per ct. in 1907.
Mesaba range	20,153,699	23,792,882	27,455,116	65.5
Menominee	4,495,491	5,109,088	5,130,167	12.3
Marquette	4,210,522	4,057,187	3,991,479	9.6
Gogebic	3,705,207	3,641,985	3,555,672	8.5
Vermillion	1,677,186	1,792,355	1,684,891	4.0

The overwhelming importance of the Mesaba District will be even more clearly shown in the following table, which gives the year each range was opened and its total and proportionate shipments since then:

	Year opened.	Total to date.—Tons.	Per cent. of total.
Marquette	1855	84,849,280	22.34
Menominee	1877	63,806,652	16.79
Gogebic	1884	54,023,478	14.23
Vermillion	1884	26,785,050	7.05
Mesaba	1892	150,198,054	39.58

The various railroad systems engaged in the transportation of iron ore on a large scale from the mines of Lake Superior have handled tonnages as follows in the past three years:

	1905.	1906.	1907.
Duluth, Missabe & Northern	8,804,443	11,220,218	13,445,979
Duluth & Iron Range	7,778,768	8,205,128	8,188,905
Great Northern	5,118,385	6,133,057	7,505,125
Chicago & Northwestern	6,729,975	6,706,986	6,975,111
Lake Superior & Ishpeming	1,844,823	1,889,631	1,916,168
Chicago, Milwaukee & St. Paul	1,310,021	1,931,244	1,585,961
Duluth, South Shore & Atlantic	1,243,388	1,074,945	1,323,346
Wisconsin Central	799,394	693,892	876,730

Unusual Difficulties Encountered.

During the year there were many unusual difficulties, and that they were surmounted so well is a tribute to the genius of those in charge of the various branches of the business, from mining to lower lake dock unloaders. To begin with, the season started late; it was April 18 before any ore laden ships left the head of Lake Superior, just nine days later than in the spring previous. This put a handicap of at least 500,000 tons on the new year. In May and June all records for those months were broken by the Duluth, Missabe & Northern Railroad, which moved an average of 2,000,000 tons each month from mines to docks at Duluth. In July, with the traffic swinging along at tremendous pace, the ore dock laborers at all head of the lake harbors struck for advanced pay, regardless of agreements they had previously made with their employers. No sooner was this strike fought to a standstill than the Western Federation of Miners, then trying to secure a foothold on the Mesaba, notified mine operators that in a week it would call out its men unless there was recognition of its organization. The Western Federation was not wanted in the Lake Superior region, and the Oliver Iron Mining Company took a most firm stand in opposition. On August 1, the day the dock strike ended, ore began to move from Hibbing, the center of the Federation's activities, and in volume greater than ever before. During the very time of the strike, the month of July, the company in stripping its Sellers mine at Hibbing broke the world's record for earth removal by taking off, with three shovels working day and night, week days only, 250,000 cu. yd. of material. In neither of these strikes did the employers recede from the position first taken and no concessions were made to the strikers. It is worthy of remark that strikes begun by the breaking of agreements and carried along unlawfully or without due reason, and contrary to public sympathy, never win, and these two were no exception to the rule. By shifting vessels and pushing stockpile loading on other ranges the net diminution in shipments by reason of this strike was during July less than 1,000,000 tons from the corresponding figures of the year before, though its effect was, to be sure, considerably more than this.

The season ended somewhat earlier than usual, the last ore boats leaving head of the lake ports about December 1 and Escanaba December 11. So warm was the late fall that operations were triflingly impeded, and there was no need of the usual thawing of ore in cars and dock pockets. In this short season the traffic moved was far larger than ever before. The Duluth, Missabe & Northern Railroad was responsible for more of this excess than any other line, its daily business averaging 100,000 tons for weeks continuously. In the month of October it handled 2,502,000 tons. The ore moved this season of navigation by this road, if loaded in steel 50-ton cars, would reach from the mines of northern Minnesota to New York City.

Improved Methods Introduced.

For the first time advantage was taken in the lake country of compressed air for sinking shafts in wet ground and of concrete for lining them. For a year or two Pickands, Mather & Co. had been attempting to get some shafts ledged near the Embarras Lake section of the Mesaba. The overburden was quicksand mixed with boulders. All ordinary methods, including the driving of steel interlocking piling, failed. Several shafts and tunnels were abandoned. Finally the Foundation Company of New York tried the method it had used successfully in the construction of foundations in that city and the shafts were placed. The plan attracted the attention of the Cleveland Cliffs Iron Company, which had in its new Gwinn District of the Marquette range somewhat similar conditions. The Foundation Company was employed and the Smith shaft was ledged just before the close of the season. While the Mesaba shafts were of cylindrical section, that at the Smith is rectangular. All are with walls of reinforced concrete, from 3 to 4 ft. thick, and the material taken out was either lifted through an inner steel core or by a grab device that worked with no men in the shaft. The air lock was not required in some instances till the shaft had touched the ledge and it was necessary to make a tight connection with rock ledge. These shafts are all dry and secure, and have cost the companies owning them from $600 to $750 per foot. While the cost is great, it is probably less than the cost of the prior attempts to reach the same points. It was thought that the Kellogg mine, near Embarras Lake and overlain by the same quicksand, would be reached by the same method, but the engineers found conditions slightly different and have been able to get down by a drop shaft of the form frequently employed on the Mesaba and elsewhere.

The Oliver Iron Mining Company has been perfecting its devices for the concentration of sandy ores of the western Mesaba, immense quantities of which it has secured possession of during the past few years. The initial washery at Trout Lake has been combined with supplementary log agitators and scrapers for loosening the sand from ore; Hancock jigs, settling tanks and tables have been added, in the hope of saving the fine ores previously lost, and the problem is now understood to be well settled. The company has elaborate plans for the mining of this class of ore, and does not wish to take any final step for the construction of the enormous cnocentration works it has in mind until the last difficulty is out of the way and it is known definitely just what the costs and savings will be. By the addition of supplementary

logs in the preliminary washing and some finer adjustments elsewhere the cost is not much increased, while savings are materially improved, so that it is understood the construction of the large plant will begin shortly. The company has continued its policy of securing lands containing these washing ores and now controls the entire west Mesaba District. Its deal for the purchase of the Great Northern lands in that district has at last been closed and work has commenced on one of the tracts.

Achievements in Opening and Equipping Mines.

During the year the Maas mine, on which the Cleveland Cliffs Iron Company has been working since 1901, was opened and is now hoisting ore. It is 1100 ft. deep, and is equipped throughout in the most modern and substantial manner. A very large deposit of ore has been found in this property, and the entire Negaunee basin, in which it lies, has been shown to contain a tonnage that was not before expected. The same company has opened its new Cascade mines, at the new and model town of Gwinn, south of Marquette, and now has three mines where a year ago it had but one. The district is very promising and its development is important.

On the Menominee range a number of new mines have been developed and opened during the year, while explorations now in progress promise to reveal still more. A very considerable tonnage has been added to lake reserves by the work of the year in that district, and it is regarded as perhaps the most promising section for new mines. The Loretto Mining Company has let a contract for the change of the course of Sturgeon River and tributaries for a mile or more, an undertaking of considerable magnitude and one that will permit the mining of large bodies of ore lying beneath the river bed and heretofore inaccessible. The Cleveland-Cliffs Iron Company has undertaken the most comprehensive scheme for reforesting waste lands near its Marquette mines that has ever been put through by any private company or corporation.

Greatest Achievements on the Mesaba.

But the astonishing achievements of the year have been on the Mesaba range. For rapidity of operation, size of undertakings, boldness of conception and almost every other superlative of industrial progress the Mesaba mine operators have led. The Oliver Iron Mining Company alone has moved off its open pit mines during the year more than 20,000,000 yd. of overburden, and its entire removal of overburden and ore from steam shovel mines alone has been more than 27,000,000 yd. In addition to this, it mined underground on the Mesaba 5,000,000 tons and on other ranges 6,000,000 tons. For the year it operated from 75 to 80 steam shovels, with the requisite number of attendant locomotives, &c. From its Sellers mine three shovels moved 250,000 yd. of material in 30 days. All last winter, with the thermometer away below zero, with several feet of snow and with the most heart breaking difficulties to contend against, it was stripping at the various Mesaba centers of Hibbing, Canisteo, Eveleth, Virginia and McKinley. In the Hibbing District alone in the winter period it moved 3,250,000 cu. yd., enough to make a pit ½ mile square and 12 ft. deep.

Three years ago this winter work was begun on the stripping of the Hull-Rust pit, and since that date this pit has already mined 3,650,000 tons of ore. Nine steam shovels have been employed at one time in this property, and in the 16 adjacent acres of the Hull-Rust and the Mahoning, as they appeared last spring, 15 shovels have been working at one time. When the Mahoning, Hull-Rust, Sellers, Burt-Pool and other vast pits adjoining the city of Hibbing are connected up according to plans there will be a single deep mine more than 12,000 ft. east and west and 3000 ft. north and south. In the stripping under way at the Canisteo, which is averaging more than 80 ft. in depth, there will be a total of 30,000,000 yd., and there are mines within a few miles that will add nearly as much more to that total. A year ago the stripping of the Virginia group was commenced at the Ohio, and the past season that group shipped 1,000,000 tons.

The cost of stripping has run from 23 and 24 cents a yard to 60 and 65 cents, the high figures being due to unusual conditions—winter work, shallow pits, bad weather, &c. The average yardage per shovel for the year has run from 2000 to 2500, no great change from preceding work. In one month five shovels, of which three were Bucyrus and two were Marion, moved 276,000 cu. yd. of material, the average number of hours worked by each shovel during the month being 471. Mesaba operators have so far been able to move about twice as much material per machine as the Government seems to get out at Panama, other conditions being fairly equal.

The Use of Electricity.

The Penn Iron Mining Company has equipped its Vulcan and East Vulcan mines with electricity, and is doing drilling, hoisting, pumping and shop work by power transmitted from the falls of the Sturgeon River, some 5 miles from the mines. Among other details it has a six-stage pump, running at 1200 rev. per min. and lifting 900 gal. per min. against a head of 1200 ft. Cages and skips are run by electricity, and with ease and precision. The acceleration of the load is very rapid and the power consumed is slight. So successful has this installation been that the Chapin Mining Company, which has for years used a great hydraulic plant on the Menominee River, transmitting compressed air to the mine, is thinking of abandoning this plant and installing electrical transmission.

On the Gogebic range, while there has been no extension of the boundaries of the valuable portion of the range east or west, though strenuous attempts have been made to that end, there has been an extension of the defined limits of the formation toward the center of the earth, and shafts are now going down to the depth of 3000 ft. Fifteen shafts either sunk or now sinking there are of steel, either steel head frames and shaft timbering and lining or one or the other of these. These shafts are in the footwall side of the lode, and are connected with it by cross cut at the various levels. Developments of recent years at such mines as the Newport, Tilden and others have shown that the importance of the Gogebic has never been properly estimated, and that its ore deposits are probably far larger than has been supposed.

Standardizing of power houses and plants, of boiler equipment, hoisting machinery, underground appliances, timbering and layout of properties has been in progress. This is in line with the more advanced practice of the day and companies can afford it better than a few years ago, when they were selling ore for about enough to bring a new dollar in place of an old one.

Explorations Actively Prosecuted.

Explorations during the year have been very general. At the close of 1906 there was considerable talk of a very large property a short distance east of Port Arthur, Ont., on which 200,000,000 tons were said to be shown. Nothing has come of this, and it is now generally understood that the showings made there were most delusive. No such tonnage nor approximation thereof was ever really found there. Of other new districts the Cuyuna is most talked of. One firm has taken a property in the vicinity of Rabbit Lake and is sinking a mine shaft. Its drill holes show ore running better than 57 per cent., and partly Bessemer, in a deep body. No one else has found good ore yet, though great depths of lean ore have been discovered.

Mesaba explorations have not shown any great tonnage. For the first time it may be doubted if as much new ore has been measured as has been mined. Explorations have been confined, for the most part, to more accurate measurements of ore bodies and a closer delimitation of what had been found previously. This work does not increase tonnage to any extent; frequently an increase by the swelling of one bounding line will be offset by the shrinkage of another; rock walls may contract, horses may be shown in the deposits and the bottoms of the deposits may come closer to the top than expected. Some new ore has been shown on the east side of Embarras Lake and more close to the quartzite line in 56-23. Some ore has been found in other west Mesaba townships, but the large deposits have been found, and what may be opened in future will be quite small, such as might have been missed by drill holes 300 ft. apart, as most of the earlier work was. These facts are significant.

Developments on the Marquette District have been referred to in the work of the Cleveland Cliffs Iron Company on the Cascade range. There a new iron bearing

section has been opened, and it is reasonable to expect that the large areas held by the Cleveland Cliffs and other companies will develop more mines than have been shown. On the western part of the Marquette range the development of old and long abandoned mines is proceeding with some vigor, and it may be that this, too, will show good deposits that can add materially to the reserves of the region.

On the Menominee Range.

Menominee developments have been extensive and a number of properties have been brought in, as the saying is, while more are in such condition that they may come into the mine enumeration another season. More exploration is in progress than elsewhere in the Lake Superior region, and the number of diamond drills boring there is greater than has been known in any lake district except the Mesaba. Conditions are such that explorations are conducted with promise over a very wide area, and for many miles the indications are such as to give much hope.

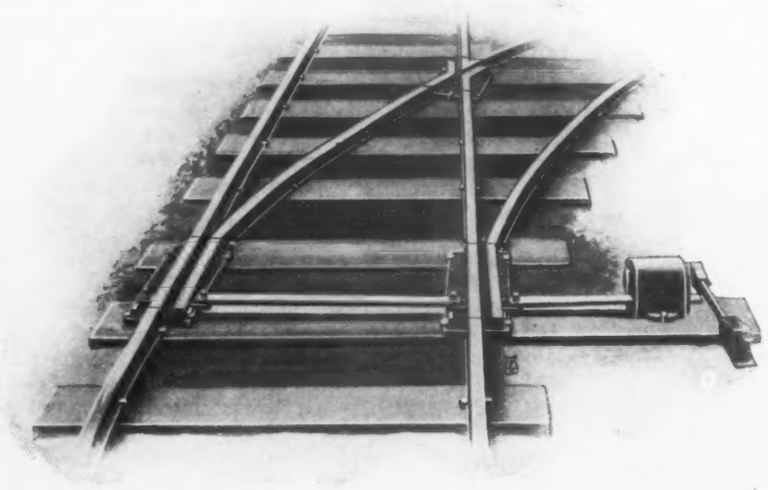
Some work has been done in western Ontario. The Atikokan country has come in with one mine found by the Oliver Iron Mining Company, and the opening of the property of the Atikokan Iron Company for its Port Arthur Furnace. The latter has shipped an average of about 200 tons a day for the past six months, and the ore is being treated successfully and unmixed at that furnace. As it is a sulphuretted magnetite, it is roasted in furnace waste gas before going into the furnace and most of the small percentage of sulphur is eliminated. A year ago exploration was in progress far to the northward, on the east shores of Nepigon Lake, and west from there along the projected line of the Grand Trunk & Pacific, but this has been abandoned, temporarily at least. Some work has been done around Hudson Bay by explorers with more of a sanguine temperament than cool reason in their blood, and they report great things. But however great the showings of iron ore may be in that region is of little consequence, now or to the next generation at least.

During the year wages at mines were raised to the highest point known. Average daily wages of mine crews were from $2.27 on the Mesaba to $2.50 on some of the older ranges; mine captains received $4.50 to $5 per day, and the lowest class of helpers and laborers from $1.86 to $2. With the advent of the present depression some mining companies have reduced pay and other have closed their mines altogether. The Oliver Iron Mining Company, the chief employer of labor in the region, has decided to make no change in the standard and will maintain wages throughout the winter at the high level of the previous summer. The number of men employed will be materially reduced.

There will be a considerable difference between the shipments of 1907 and those probable for 1908. The shipments of 1907 were sufficient, in the flood tide of consumption, to keep furnaces at work and provide a supply for the coming winter. When furnaces began to close ore piled up at lower lake docks and in steel company yards at a rapid rate, until, late in the season, the docks and yards were clogged and lower lake railroads were congested. More and more furnaces closed, the consumption of ore diminished to less than half of what it was, and still the forwardings from upper lakes remained at high pressure. This was continued to the very close of navigation, so there is on hand in the East more ore than has been known in the history of the trade, not only actually in tons, but proportionately to average consumption. As there is little hope of a general resumption of furnaces before the coming spring, much of this ore will be on the market when navigation opens. In other words, there will be no incentive for excessive shipments the coming season. Doubtless large melters among the steel companies will endeavor to maintain reserve stocks near furnaces in order to guard against a famine, should there be labor troubles or accidents to any one of the many links in the chain of transportation. But representatives of some of the largest shippers look for diminished shipments to the extent of from 25 to 33 percent. This would make the business of 1908 from 28,000,000 to 32,000,000 tons. The writer does not think they will be reduced quite so much, but this is altogether too early to make any predictions. There have been no sales of ore and inquiries for the new year are rare. Other than for a few of the standard Bessemers there are practically none.

The Chase Improved Industrial Railroad Switch.

A new development in industrial railroad switches, which is manufactured and placed on the market by the Chase Foundry & Mfg. Company, Columbus, Ohio, is shown in the accompanying illustration. Many advantages are claimed for this switch; it is simple, durable, economical and reliable, and can be placed in position and in working order by an ordinary workman without the assistance of a blacksmith or skilled mechanic.



The Style 75 Patent Switch Made by the Chase Foundry & Mfg. Company, Columbus, Ohio.

As will be seen from the engraving, the switch consists of two plates which carry the double oscillating rail, two sections of double rail, frog, switchstand complete and connecting rods. The plates of both the switch and the frog are recessed to receive the end of the rail to which it joins, preventing any possibility of either the rail or the switch being forced out of position or alignment by hard usage or frost. In many cases where the loads to be carried are not heavy, or the speed of the car not over 5 or 6 miles an hour, the switch is used independently of the switchstand. In this case the switch is operated by the foot, which is very easily and quickly done.

The illustration shows the switch as set for the main line connection. To connect with the branch track, the weighted lever at the right is thrown over to the rear, and the other two sections of rail on the switch plates are brought into line with the main track rails in the foreground.

The improved switch is the latest addition to the company's already extensive line of industrial railroad equipment, which includes in addition to everything pertaining to track systems, trucks, cars, &c.

The Petroleum Iron Works Company, manufacturing all classes of steel plate construction, is located at Sharon, Pa., and not at South Sharon, as mentioned in a recent issue of this paper.

The Chicago Hardware Foundry Company.

The Chicago Hardware Foundry Company, North Chicago, Ill., in the execution of plans to take care of its growing business, has added to its plant two substantial buildings. One of these is designed for the convenient storage of patterns and is built entirely of fireproof materials. The walls are of brick, resting on rubble concrete foundations, and are not pierced by openings of any kind, except one door at each end of the building, both doors being fireproof. Light is admitted by two skylights, each 6 ft. wide, running the entire length of the building, and artificial illumination is furnished by electric lights. The skylights have metal frames and are glazed with ¼ in. thick wire glass.

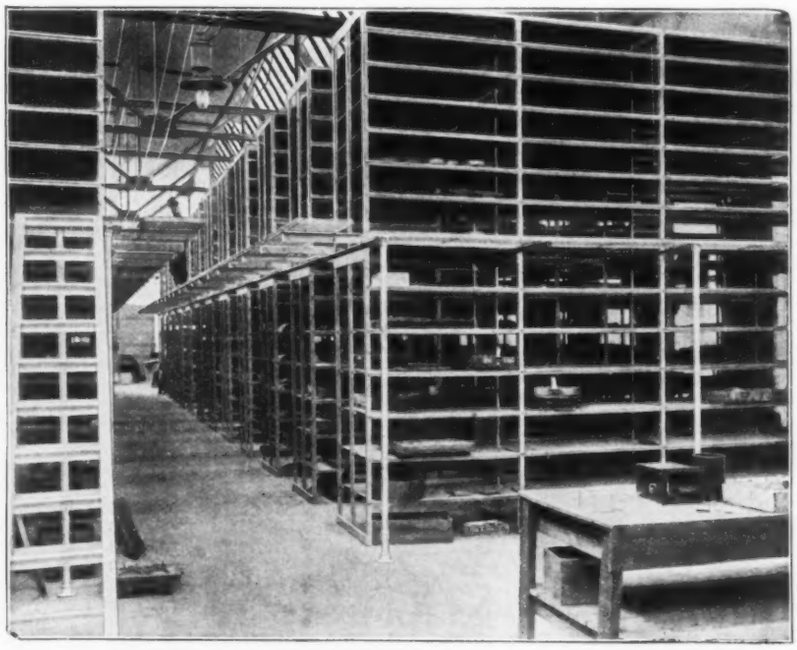


Fig. 1.—Shelves for Patterns in the Pattern Storage Building of the Chicago Hardware Foundry Company, North Chicago, Ill.

The provision made for the storage of patterns is shown in Fig. 1. This consists of a system of easily accessible shelves, affording means for the orderly disposal of a great number of patterns. These shelves, or racks, are arranged in double tiers, which extend the full length of the building, with a central aisle between each tier. They are 12 ft. in hight and are constructed entirely of steel. The shelves of the lower tier are reached from the floor and those of the upper tier are made accessible by stairways leading to galleries from which the higher shelves are easily reached. In order to prevent the obstruction of light, and also to avoid the use of combustible material, the gallery walks are made of heavy wire held in steel frames. Each tier contains 24 steel racks for small patterns, 12 on each side of the building abutting the walls with cross aisles opening into the center aisle, thus affording free access to both sides of the rack. In addition to the main racks shown in the illustration there are placed along the walls at the end of the building additional racks for the storage of larger patterns. The building is warmed by steam, carried in overhead pipes supported from the trusses, and is ventilated by registers placed in the outside walls at the floor level and by ventilators in the roof. In its design and construction, from a viewpoint of convenience and security, the building is a model one.

Fig. 2 shows an interior view of the new sand storage building. This structure is 66 x 210 ft., with a railroad track in the center and storage bins on each side, into which the sand is unloaded directly from the cars. At the outside ends of the bin there are covered passageways, giving access to all the sand stored in the building. The sides of the bins are constructed of concrete reinforced with rods and expanded metal fabric and are 6 in. thick. The roof, which is framed of wood, rests on posts supported by the concrete sides of the bins and is covered with No. 18 corrugated steel. The company makes a specialty of hardware castings in soft gray iron, brass and aluminum, and also has well equipped departments for enameling and nickel plating.

Fig. 2.—Interior of Sand Storage Building of the Chicago Hardware Foundry Company.

The Baldwin Locomotive Works, Philadelphia, Pa., built 2663 locomotives in 1907. This is the largest output in the history of the works. It equaled the entire output for the first 30 years of the works' history and is nearly as many as were constructed during the years 1872 to 1880, inclusive. To produce these results a weekly average of 18,655 men was employed. Of the 1907 output of engines, 363 were for export to Santo Domingo, Korea, Australia, Russia, Argentine, Peru, Panama, Manchuria, Haiti, Spain, Alaska, Philippines, Newfoundland, Costa Rica, Egypt, Canada, France, Nicaragua, Nova Scotia, Chile, Hawaii, Mexico, China, Porto Rico, Colombia, Cuba, Japan and Brazil. The output comprised 2371 steam locomotives and 292 electric locomotives. Of the steam locomotives 40 were of the Mallet type, which comprises two sets of driving wheels, cylinders and valve gear under one large boiler. Two of these locomotives are about equivalent to three ordinary locomotives. They have, of course, been counted in as only one each.

The semiannual or spring meeting of the American Society of Mechanical Engineers will be held this year in Detroit, Mich. The date has not been announced, but will probably be in the early part of May, as usual.

Fluctuations in the Prices of Iron and Steel Products 1898-1907.

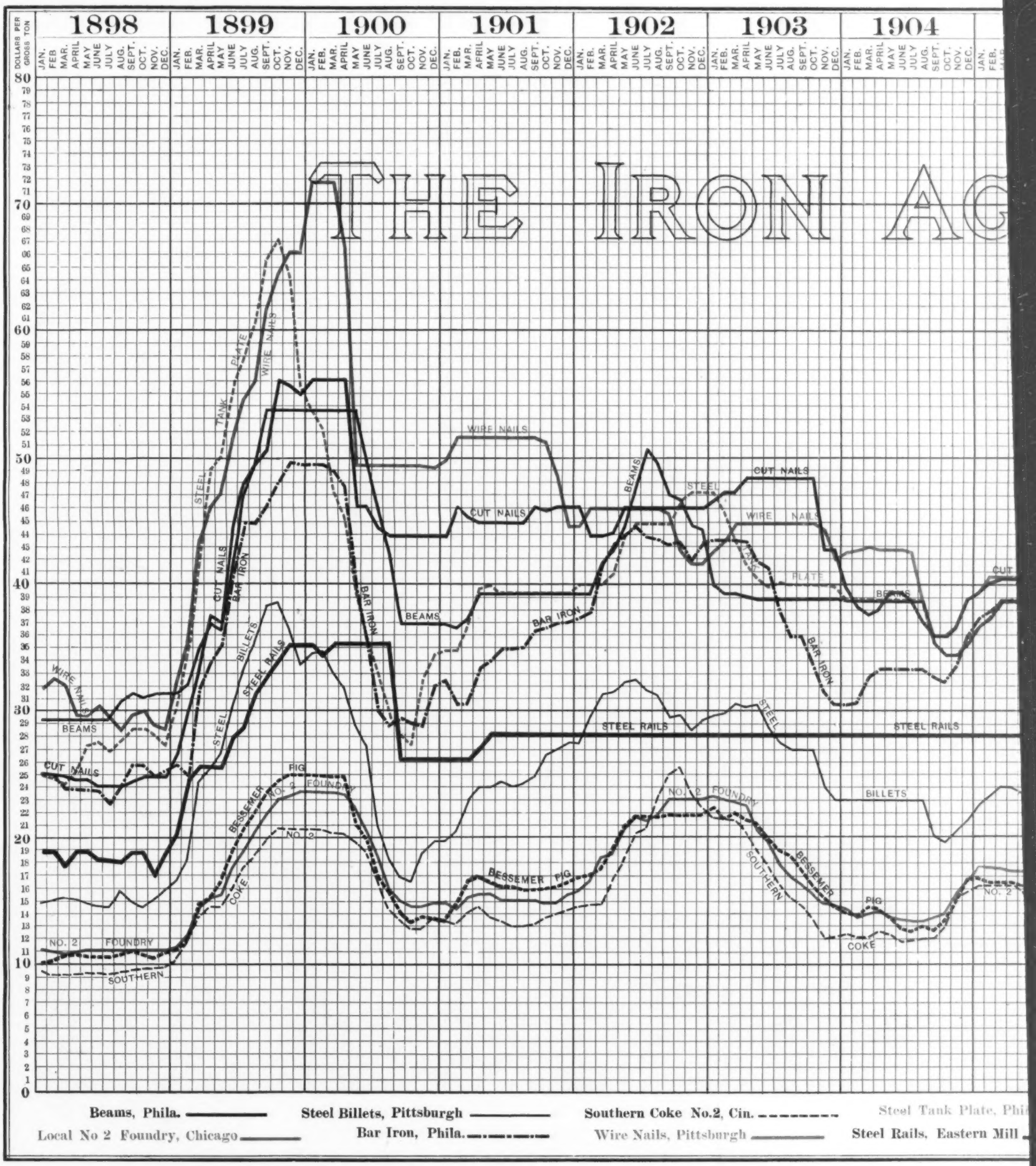
In the Supplement accompanying this issue is our annual chart which represents by plotted lines the course of prices for pig iron, Bessemer steel billets and the leading forms of finished iron and steel in the ten-year period 1898—1907. The diagrams are based on monthly averages of prices given week by week in the market reports of *The Iron Age* from the leading distributing centers. The figures on the margin of the chart represent dollars and all the plotted lines refer to gross tons. In the case of finished material market prices per pound have been multiplied by 2240 so that the diagrams might show the direct relation between like quantities of raw materials and semi-finished and finished materials.

In the table herewith are given the monthly average prices—that is, the average of the weekly market quotations for each month—these being for Bessemer pig iron at Pittsburgh, Southern No. 2 foundry iron at Cincinnati, Local No. 2 foundry iron at Chicago, Bessemer steel billets at Pittsburgh, tank plates, refined bar iron and beams at Philadelphia and cut nails and wire nails at Pittsburgh. In addition the chart gives the monthly average price of steel rails, which can be readily ascertained from the plotted lines. In the table below the prices for pig iron and steel billets are in dollars per gross ton, while those for finished materials are in cents per pound:

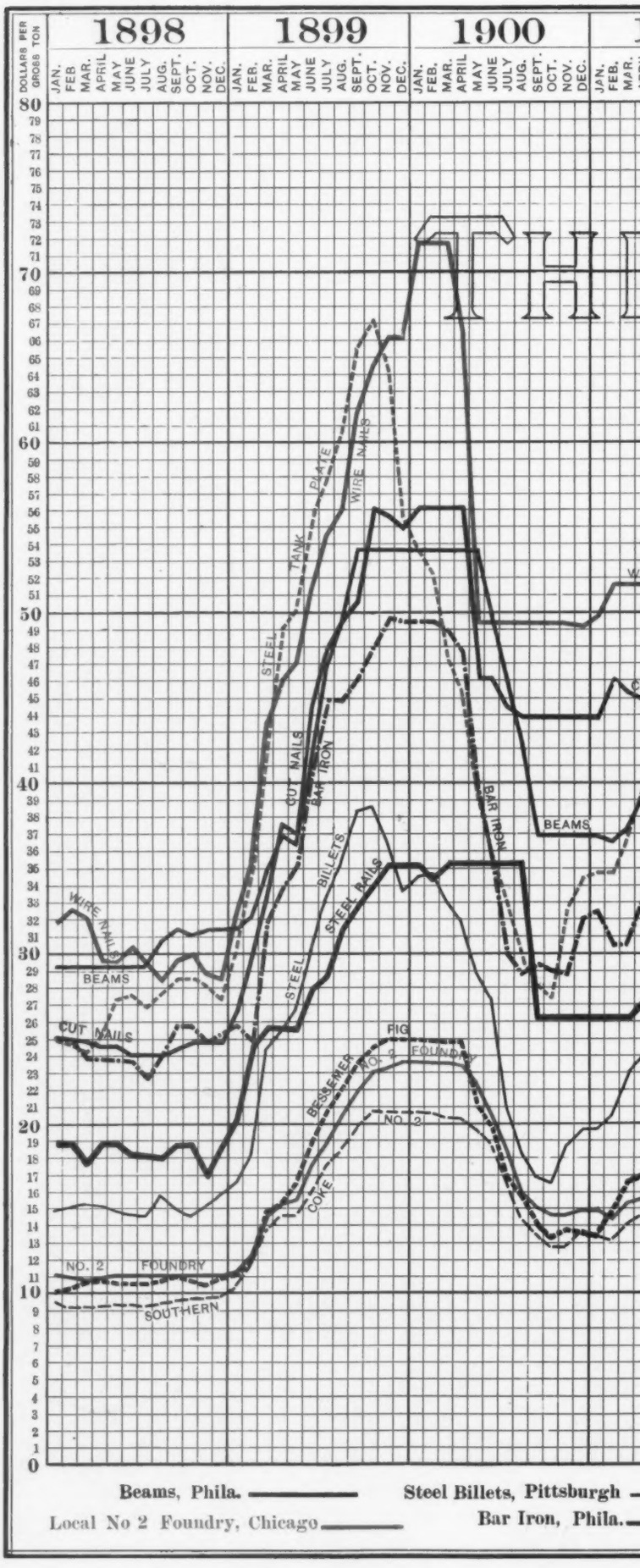
Average Monthly Prices, 1898-1907.

Months.	Bessemer pig, Pittsburgh.	Steel billets, Pittsburgh.	So. No. 2 foundry, Cincinnati.	Local No. 2 foundry, Chicago.	Cut nails, Pittsburgh.	Tank plate, Philadelphia.	Beams, Philadelphia.	Ref'd bar iron, Philadelphia.	Wire nails, Pittsburgh.
1898									
Jan.	9.87	14.93	9.50	11.00	1.10	1.10	1.30	1.11	1.42
Feb.	10.05	15.06	9.25	10.93	1.10	1.10	1.30	1.11	1.45
March	10.39	15.25	9.25	10.75	1.10	1.08	1.30	1.06	1.43
April	10.41	15.06	9.25	10.91	1.08	1.12	1.30	1.05	1.31
May	10.30	14.85	9.37	11.00	1.08	1.21	1.30	1.05	1.31
June	10.34	14.65	9.30	11.00	1.06	1.23	1.30	1.05	1.35
July	10.25	14.50	9.25	11.00	1.06	1.20	1.30	1.00	1.31
Aug.	10.35	15.85	9.37	11.00	1.05	1.23	1.37	1.06	1.26
Sept.	10.78	16.00	9.55	11.00	1.08	1.27	1.40	1.14	1.32
Oct.	10.36	15.56	9.75	11.00	1.10	1.27	1.38	1.13	1.33
Nov.	10.15	15.06	9.75	11.00	1.10	1.25	1.35	1.10	1.28
Dec.	10.58	15.80	9.90	11.00	1.10	1.26	1.35	1.11	1.27
1899									
Jan.	10.87	16.62	10.31	11.12	1.18	1.35	1.40	1.15	1.43
Feb.	11.60	18.00	11.69	12.12	1.32	1.55	1.42	1.20	1.57
March	14.59	24.30	13.75	14.60	1.48	1.89	1.55	1.41	1.94
April	15.03	25.37	14.50	15.12	1.67	2.18	1.64	1.50	2.05
May	16.20	26.75	14.56	15.37	1.65	2.23	1.63	1.56	2.10
June	18.51	30.10	16.00	17.60	1.97	2.48	1.82	1.81	2.30
July	20.65	33.12	17.56	18.87	2.12	2.58	2.08	2.00	2.42
Aug.	21.75	35.40	18.35	20.30	2.20	2.72	2.20	2.00	2.50
Sept.	23.43	38.37	19.94	21.87	2.45	2.92	2.40	2.05	2.76
Oct.	24.18	38.75	20.75	23.00	2.50	3.00	2.40	2.13	2.87
Nov.	24.78	36.50	20.75	23.10	2.48	2.87	2.40	2.21	2.95
Dec.	24.90	33.75	20.75	23.50	2.45	2.48	2.40	2.20	2.95
1900									
Jan.	24.90	34.50	20.69	23.50	2.50	2.38	2.40	2.20	3.20
Feb.	24.80	34.87	20.50	23.50	2.50	2.32	2.40	2.20	3.20
March	24.72	33.00	20.30	23.50	2.50	2.10	2.40	2.18	3.20
April	24.70	32.00	20.19	23.37	2.50	2.02	2.40	2.12	2.95
May	21.00	28.90	19.75	22.30	2.05	1.75	2.40	1.77	2.20
June	19.72	27.25	18.75	20.37	2.05	1.60	2.22	1.56	2.20
July	16.75	21.00	16.81	18.25	1.97	1.37	2.05	1.33	2.20
Aug.	15.60	18.20	14.25	15.90	1.95	1.30	1.89	1.28	2.20
Sept.	13.87	16.93	13.62	15.00	1.95	1.25	1.65	1.30	2.20
Oct.	13.06	16.50	12.87	14.50	1.95	1.21	1.65	1.28	2.20
Nov.	13.48	18.95	12.95	14.50	1.95	1.44	1.65	1.28	2.20
Dec.	13.43	19.75	13.75	14.75	1.95	1.54	1.65	1.42	2.20
1901									
Jan.	13.15	19.75	13.45	14.75	1.95	1.55	1.65	1.44	2.22
Feb.	14.43	20.31	13.12	14.25	2.05	1.55	1.63	1.35	2.30
March	16.31	22.88	14.00	15.25	2.01	1.62	1.66	1.35	2.30
April	16.75	24.00	14.50	15.50	2.00	1.76	1.75	1.47	2.30
May	16.30	24.00	13.85	15.50	2.00	1.78	1.75	1.51	2.30
June	16.00	24.38	13.37	15.00	2.00	1.75	1.75	1.55	2.30
July	16.00	24.00	13.00	15.00	2.00	1.75	1.75	1.55	2.30
Aug.	15.75	24.20	13.00	15.00	2.00	1.75	1.75	1.56	2.30
Sept.	15.75	24.88	13.06	15.00	2.05	1.75	1.75	1.61	2.30
Oct.	15.89	26.70	13.75	14.75	2.04	1.75	1.75	1.62	2.28
Nov.	16.00	27.00	14.00	14.88	2.05	1.75	1.75	1.64	2.17
Dec.	16.31	27.50	14.25	15.50	2.05	1.75	1.75	1.65	1.99
1902									
Jan.	16.70	27.50	14.55	15.90	2.05	1.78	1.75	1.66	1.99
Feb.	16.93	29.37	14.75	16.50	1.95	1.78	1.75	1.68	2.05
March	17.37	31.25	14.75	18.16	1.95	1.78	1.85	1.84	2.05
April	18.75	31.50	16.87	18.62	1.96	1.81	1.90	1.92	2.05
May	20.75	32.20	18.35	20.50	2.05	1.95	1.99	1.96	2.05
June	21.56	32.37	20.19	21.50	2.05	2.00	2.11	1.99	2.05
July	21.60	31.75	20.75	21.25	2.05	2.00	2.27	1.95	2.05
Aug.	21.62	31.06	23.06	21.75	2.05	2.00	2.21	1.93	2.05
Sept.	21.75	29.50	25.00	23.00	2.05	2.00	2.10	1.92	2.03
Oct.	21.75	29.70	25.65	23.00	2.05	2.06	2.09	1.93	1.89
Nov.	21.68	28.50	23.62	23.00	2.05	2.10	2.00	1.87	1.85
Dec.	21.75	29.12	22.44	23.00	2.05	2.10	1.97	1.92	1.85
1903									
Jan.	22.15	29.60	21.65	23.10	2.07	2.10	1.78	1.93	1.89
Feb.	21.45	29.87	21.50	23.00	2.10	2.05	1.75	1.93	1.92
March	21.85	30.62	21.37	22.87	2.10	1.94	1.75	1.94	2.00
April	21.28	30.25	20.15	22.52	2.15	1.85	1.74	1.93	2.00
May	20.01	30.37	18.87	20.37	2.15	1.80	1.73	1.86	2.00
June	19.72	28.87	17.75	19.50	2.15	1.78	1.73	1.79	2.00
July	18.89	27.60	16.15	17.90	2.15	1.77	1.73	1.69	2.00
Aug.	18.35	27.00	15.19	16.87	2.15	1.78	1.73	1.60	2.00
Sept.	17.22	27.00	14.75	16.06	2.15	1.78	1.73	1.60	2.00
Oct.	16.05	27.00	13.50	15.35	2.15	1.78	1.73	1.50	2.00
Nov.	15.18	24.00	12.00	14.75	1.90	1.78	1.73	1.40	1.97
Dec.	14.40	23.00	12.05	14.46	1.90	1.77	1.73	1.35	1.87
1904									
Jan.	13.91	23.00	12.37	14.12	1.77	1.73	1.73	1.35	1.89
Feb.	13.66	23.00	12.12	13.56	1.70	1.73	1.73	1.36	1.90
March	14.25	23.00	12.10	13.70	1.72	1.73	1.73	1.45	1.91
April	14.18	23.00	12.50	14.00	1.74	1.73	1.73	1.48	1.90
May	13.60	23.00	12.25	13.50	1.75	1.73	1.73	1.48	1.90
June	12.81	23.00	11.80	13.35	1.75	1.73	1.73	1.48	1.90
July	12.40	23.00	11.81	13.25	1.72	1.73	1.73	1.48	1.89
Aug.	12.81	23.00	12.00	13.25	1.65	1.73	1.73	1.48	1.71
Sept.	12.63	20.00	12.00	13.50	1.60	1.57	1.57	1.45	1.60
Oct.	13.10	19.50	12.81	13.75	1.60	1.53	1.53	1.43	1.60
Nov.	14.85	20.25	15.19	15.63	1.62	1.53	1.53	1.47	1.62
Dec.	16.65	21.20	15.85	16.60	1.73	1.57	1.57	1.60	1.73
1905									
Jan.	16.85	22.75	16.25	17.50	1.75	1.63	1.63	1.65	1.75
Feb.	16.41	23.50	16.25	17.50	1.79	1.66	1.66	1.68	1.80
March	16.25	24.00	16.25	17.45	1.80	1.73	1.73	1.73	1.80
April	16.35	24.00	16.25	17.25	1.80	1.73	1.73	1.73	1.80
May	16.16	23.50	15.81	17.25	1.80	1.73	1.73	1.71	1.80
June	16.65	22.00	14.65	16.65	1.80	1.73	1.73	1.63	1.74
July	14.85	22.00	13.94	16.12	1.80	1.73	1.73	1.63	1.70
Aug.	15.20	24.00	14.40	16.25	1.66	1.73	1.76	1.63	1.70
Sept.	15.91	25.00	14.37	16.25	1.60	1.73	1.88	1.66	1.74
Oct.	16.54	25.62	15.31	17.31	1.65	1.73	1.87	1.78	1.80
Nov.	17.85	26.00	16.60	18.80	1.65	1.73	1.83	1.83	1.80
Dec.	18.35	26.00	16.75	19.25	1.71	1.73	1.83	1.83	1.80
1906									
Jan.	18.35	26.25	16.75	19.25	1.75	1.73	1.83	1.86	1.85
Feb.	18.35	26.50	16.75	19.06	1.79	1.73	1.83	1.78	1.85
March	18.28	26.70	16.65	19.00	1.80	1.73	1.83	1.73	1.85
April	18.19	27.00	16.63	18.75	1.80	1.73	1.83	1.66	1.85
May	18.10	26.40	16.75	18.55	1.80	1.73	1.83	1.63	1.85
June	18.23	26.63	16.44	18.19	1.75	1.73	1.83	1.63	1.85
July	18.41	27.25	16.06	18.25	1.75	1.73	1.83	1.63	1.84
Aug.	19.00	27.80	17.30	19.10	1.75	1.73	1.83	1.67	1.82
Sept.	19.54	28.00	18.69	19.81	1.80	1.73	1.83	1.76	1.86
Oct.	20.35	28.00	20.00	21.13	1.90	1.73	1.83	1.83	1.85
Nov.	22.85	28.88	23.38	24.35	1.93	1.73	1.83	1.83	1.88
Dec.	23.75	29.50	25.00	25.50	2.05	1.99	1.83	1.83	2.00
1907									
Jan.	23.15	29.40	26.00	25.50	2.05	2.13	1.83	1.91	2.00
Feb.	22.85	29.50	26.00	25.50	2.05	2.13	1.83	1.93	2.00
March	22.85	29.00	26.00	25.75	2.05	2.13	1.83	1.93	2.00
April	23.35	30.12	25.06	26.00	2.05	2.03	1.83	1.91	2.00
May	24.01	30.30	24.25	26.50	2.05	1.94	1.83	1.83	2.00
June	24.27	29.62	24.10	26.25	2.05	1.91	1.84	1.83	2.00
July	23.55	30.00	23.85	25.20	2.05	1.85	1.85	1.84	2.00
Aug.	22.90	29 25	23.00	24.50	2.10	1.85	1.85	1.85	2.00
Sept.	22.90	29.37	21.50	23.75	2.11	1.85	1.85	1.81	2.05
Oct.	22.90	28.20	20.95	22.10	2.07	1.85	1.85	1.75	2.05
Nov.	20.65	28.00	19.50	20.31	2.01	1.85	1.85	1.75	2.05
Dec.	19.34	28.00	17.00	18.45	2.00	1.85	1.85	1.75	2.05

Referring to the chart, the lines representing pig iron prices in the second half of 1906 and the first half of 1907 tell the story of the way in which pig iron became a law to itself, and made a violent advance in contrast with the generally even tenor of the markets for most finished materials. In the latter part of last year pig iron declined, and the reverse curve again contrasts with the moderate dip of some of the lines for rolled products and the uniform maintenance of others. Southern iron, because of a special scarcity of labor and of raw materials in that section, was held on a relatively higher basis than



Fluctuations in the Prices of Crude and Finished
from January 1, 1898, to January 1, 1908—Gr


1898
1899
1900
DOLLARS PER GROSS TON
JAN. FEB MAR. APRIL MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
80 79 78 77 76 75 74 73 72 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
STEEL
TANK PLATE
WIRE NAILS
CUT NAILS
BAR IRON
BILLETS
STEEL RAILS
BEAMS
WIRE NAILS
CUT NAILS
BESSEMER
FIG
NO. 2 FOUNDRY
COKE
NO. 2 FOUNDRY
SOUTHERN
BEAMS
BAR IRON
Beams, Phila.
Local No 2 Foundry, Chicago
Steel Billets, Pittsburgh
Bar Iron, Phila.

Fluctuations in the I
from January

e Prices of Crude and Finished Iron and Steel
ry 1, 1898, to January 1, 1908—Gross Tons.

Northern iron. The prices given in all cases represent the market for early deliveries. Naturally a curve based on contract prices, under which deliveries were made for periods of six months or longer, would show a much less steep ascent and descent. The period covered by the chart is one of the most interesting in the history of the iron trade of the country. The year 1898 was the first good year following the panic of 1893 and the ensuing depression. Then came the boom of 1899, shown by an unparalleled steepness of the ascending price lines and a like sharp angle in the decline of 1900. Another boom, but of less violence, is shown in 1902, and last of all came that of 1906 and 1907.

Iron and Steel Production in 1906.

Publication was made in the early months of 1907 of the statistics of production of pig iron, steel ingots and steel rails in the United States in 1906, as compiled by the American Iron and Steel Association. From advance sheets of "Statistics of the American Iron Trade for 1906," which is the Annual Report of the Association, we take the following general statistical summary. The table gives the total production in 1905 and 1906 of all kinds of iron and steel, and the figures are in gross tons, except those for nails:

	1905.	1906.
Pig iron, including spiegeleisen and ferromanganese	22,992,380	25,307,191
Spiegeleisen, ferromanganese, ferrophosphorus, &c.	293,976	305,642
Bessemer steel ingots and castings	10,941,375	12,275,830
Open hearth steel ingots and castings	8,971,376	10,980,413
All kinds of steel ingots and castings	20,023,947	23,398,136
Structural shapes, not including plates	1,660,519	2,118,772
Plates and sheets, except nail plate	3,532,230	4,182,156
Iron and steel wire rods	1,808,688	1,871,614
All rolled iron and steel, except rails	13,464,086	15,610,581
Bessemer steel rails	3,192,347	3,791,459
All kinds of rails	3,375,929	3,977,887
All rolled iron and steel, including rails	16,840,015	19,588,468
Iron and steel cut nails, in kegs	1,357,549	1,189,239
Iron and steel wire nails, in kegs	10,854,892	11,486,647

The increase in the production of structural shapes and of plates and sheets are noteworthy features of the table. It appears that in the case of wire rods there was a comparatively slight increase over the output of 1905. In all rolled iron and steel products the increase was from 16,840,015 gross tons to 19,588,468 tons, or over 16 per cent.

Pig Iron Production by Grades.

The pig iron figures for 1906, which were published at the end of January last year, did not give the distribution by grades. This additional information is furnished in the following table taken from the Report, the figures representing gross tons, and comparison being made with the three preceding years:

	1903.	1904.	1905.	1906.
Bessemer and low-phosphorus	9,989,908	9,098,659	12,407,116	13,840,518
Basic (mineral fuel)	2,040,726	2,483,104	4,105,179	5,018,674
Forge pig iron	783,016	550,836	727,817	597,420
Foundry and high silicon	4,409,023	3,827,229	4,755,288	4,768,011
Malleable Bessemer	473,781	263,529	635,236	699,701
Spiegeleisen	156,700	162,370	227,797	244,980
Ferromanganese	35,961	58,022	66,179	60,662
White, mottled, &c. Direct castings	120,137	53,284	67,768	77,225
Totals	18,009,252	16,497,033	22,992,380	25,307,191

The Bessemer figures include low phosphorus pig iron—that is, iron running below 0.04 per cent. in phosphorus. Pig iron containing from 0.04 to 0.10 per cent. of phosphorus is classified as Bessemer. The basic figures are confined strictly to pig iron made with mineral fuel and do not include the small quantity of basic iron that is made with charcoal. A few thousand tons of castings direct from the blast furnace are included in the totals for the last two items in the table.

Production of Steel Castings.

The preliminary statistics of the production of Bessemer and open hearth steel castings in 1906 have already been published. Complete figures are now available and are given below. Of the total of 719,891 tons of open hearth castings, 406,343 tons was acid and 313,548 tons basic castings, as compared with 320,381 tons and 206,159 tons, respectively, in 1905:

	Bessemer.	Open hearth.	Crucible and all other.	Total. Gross tons.
Massachusetts, Rhode Island, Connecticut, New York and New Jersey	8,921	89,510	11,295	109,726
Pennsylvania	3,497	305,062	2,303	310,862
Delaware, District of Columbia, Virginia, Tennessee, Alabama and Ohio	10,791	105,383	1,400	117,574
Indiana, Illinois and Michigan	5,063	158,242	2,729	166,034
Wisconsin, Minnesota, Missouri, Colorado, Oregon and California	4,329	61,694	3,486	69,509
Totals	32,601	719,891	21,213	773,705

The total production of steel castings in 1905 was 560,767 tons, so that the increase in 1906 was 212,938 tons, or over 37.9 per cent. Of the total production in 1906 Pennsylvania made over 40.1 per cent., against over 42.1 per cent. in 1905; Illinois over 17.6 per cent., against over 17.5 per cent. in 1905; and Ohio over 12.4 per cent., against over 12.6 per cent. in 1905. No other State made 7 per cent. in 1906 or 1905.

The preliminary figures for steel rail production in 1906, published in April last year, showed that the total would be close to 4,000,000 gross tons. It was then stated that the open hearth rail output would probably not be over 200,000 tons. The completed statistics show a total of 186,413 tons, against 183,264 tons in 1905, 145,883 tons in 1904 and 45,054 tons in 1903. Alabama made over 84 per cent. of the open hearth rails rolled in 1906, Pennsylvania, Georgia and Colorado rolling the remainder. The total Bessemer rail production in 1906 was 3,791,459 tons, while 15 tons of iron rails were rolled. The total of all kinds of rails produced in 1906 was 3,977,887 tons.

American Society for Testing Materials.—Arrangements have been made for holding meetings of the various standing technical committees of the American Society for Testing Materials at Columbia University, New York, Tuesday and Wednesday, January 28 and 29. The sessions will be opened by a joint meeting of the members of the committees January 28, at 10 o'clock, in room 302, Engineering Building. The several committees will make their own arrangements for subsequent meetings, which will be held separately. Announcement is made in a circular just issued by Secretary Marburg of the result of the ballot on the proposed standard specifications for steel rails, submitted at the Atlantic City meeting in June, 1907. The number of ballots cast was 161, of which 125 were affirmative and 18 negative, with 18 not voting.

A pamphlet has been published by the Goldschmidt Thermit Company, New York, reprinting from the *Journal* of the Franklin Institute extracts from a report made by Engineer Albert Obholzer, on the methods used to avoid piping in steel ingots in the Hungarian Government steel foundries at Diosgyör. Thermit put up in a box fastened tightly to an iron rod, so as to be sunk in the fluid steel was used in the tops of heavy ingots to increase their solidity. Sink heads are employed and on the introduction of the thermit charge there is a strong boiling up of the steel bringing slag to the surface plentifully. The slag is lifted off and more fluid steel poured in. The result is a considerable reduction in piping. The aim is to keep the steel liquid until the piping can be filled up from the feeding head. Illustrations are given of ingots poured with and without feeding heads, and with and without thermit. The advantage of pouring heavy ingots with feeding heads is demonstrated, and it is stated to be possible by the use of thermit and by the continued introduction of fresh fluid steel to remove piping entirely.

The most powerful engine ever put in an automobile is one of six cylinders and 200 hp. in a French Darracq racing machine. In its preliminary trials it is reported to have attained an average speed of 125 miles an hour.

A Universal Edge Tool Grinder.

An additional function is the principal difference between the machine illustrated and the Quick-Sharpening edge tool grinder, both made by the Mummert, Wolf & Dixon Company, Hanover, Pa. While the latter, which was described in *The Iron Age* June 6, 1907, is adapted for sharpening all kinds of edge tools, the new machine has a knife grinding attachment for grinding long knives such as those used in wood planers. Both are equipped with revolving oil stones in place of emery wheels, and in other respects are similar to grinding machines which are already familiar. Fig. 1 shows a rear view of the completely equipped machine, and Fig. 2 a front view with the knife grinding attachment removed.

As will be seen the arbor carries two oil stone wheels; one of these is comparatively coarse grained for fast grinding and the other is fine grained for giving the final smooth keen edge. On the end of the main spindle is a grinding cone for shapening patternmakers' gouges, and at the back as may be seen in Fig. 1 is a small grinding wheel for doing general light grinding. Equipped as it is, this machine is very appropriately called a universal grinder, for to quickly sharpen all kinds of edge tools, it does of itself the work which would ordinarily require a grindstone, emery grinders and bench oil stones.

The wheel arbor is driven by a quarter turn belt from a driving shaft mounted on the base at right angles with the arbor, and an idler pulley serves to take up the stretch of the belt. An advantage in the location of the main driving pulleys is that they are at the rear where the driving belt is out of the way, and can conveniently be run to an overhead shaft or one below the floor.

The knife grinding attachment is fully automatic, and has a strong and rigid knife bar to which the knife to be ground is easily attachable and as easily removed. The bar is adjustable so that either an acute or a blunt angle may be ground, and the attachment is swiveled at the center to permit bringing the work in contact with either of the wheels. The attachments are made for 30, 40 and 50 in. knives. To remove the attachment does not require the taking out of any bolts, as hand screws are provided for holding the device. It is therefore convenient to apply the attachment only as needed, which is generally seldom, as long knives would perhaps need to be ground only once or twice a month, and at all other times the machine can be left in condition for the more common every day uses of sharpening hand tools.

Fig. 1.—Rear View of the Universal Edge Tool Grinder Made by the Mummert, Wolf & Dixon Company, Hanover, Pa.

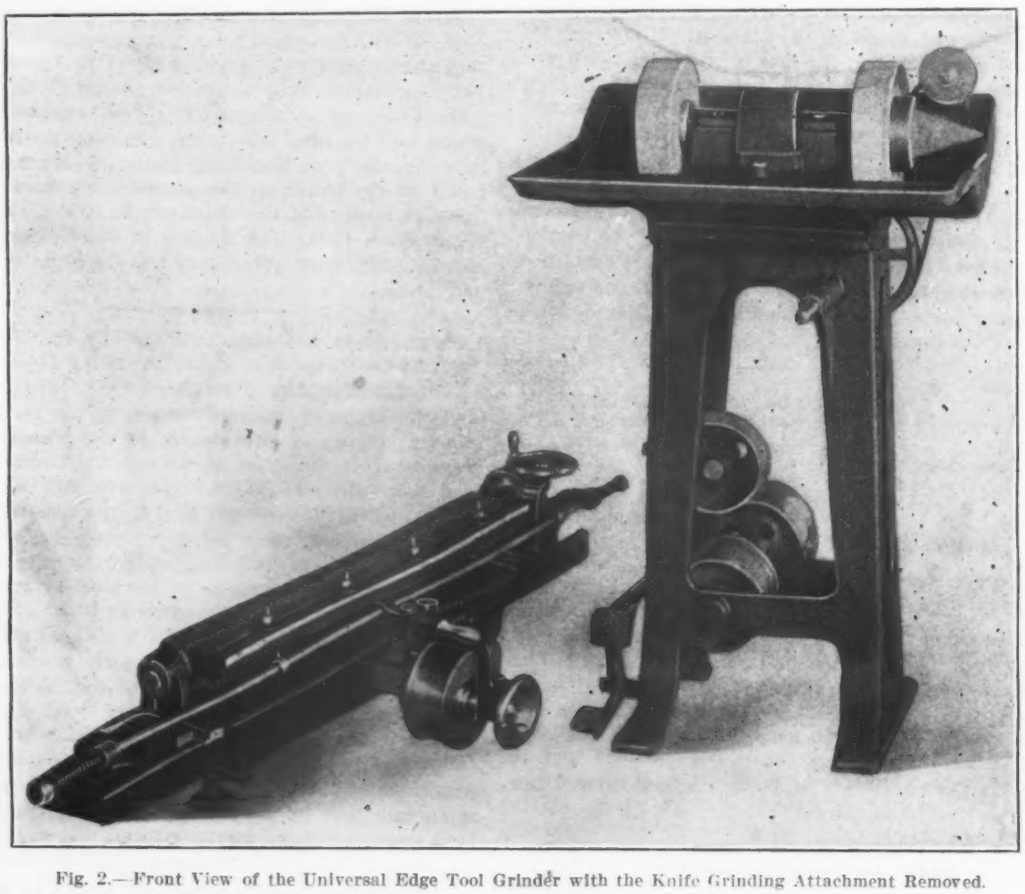


Fig. 2.—Front View of the Universal Edge Tool Grinder with the Knife Grinding Attachment Removed.

In the use of the machines it is necessary before

starting to see that the oil stone wheels are thoroughly saturated with kerosene. The wheels readily absorb the oil, and when not running appear to be dry, but when in operation at the proper speed centrifugal force causes the oil to work to the surface. It is not thrown off, however, on account of the adhesion of the oil to the stone. The oil fulfills two purposes: by keeping the surface of the wheels moist it prevents the tool from heating, and it also keeps the surface of the stones clean and sharp preventing glazing. After the stones have been once saturated it is only necessary to apply a few drops of oil occasionally.

The regular equipment of the grinder includes two oil stone wheels 8 in. in diameter by 2 in. face, one grinding cone 3 in. in diameter by 5 in. long, and one grinding wheel 3 in. in diameter by 3-16 in. thick. The tight and loose pulleys are 6 in. in diameter by 2-in. face, and are intended to run at 260 rev. per min.

Hardening High Speed Steels.

BY NELS GROSS.

It is not the purpose of this article to lay down any hard or fast rules for heating high speed steels. A method that can be practiced with excellent results on one brand may not prove at all practical on another. A common error is to treat different brands in the same manner, disregarding entirely the special instructions by the makers. As it is a known fact that many users of high speed steels are yet experiencing difficulties in successfully hardening tools made from this material, some suggestions may be of value to them.

General Considerations.

Most high speed steels will begin to harden at about 1600 degrees F., which is a little higher than a cherry red. However, a tool quenched at this temperature will not give satisfactory results. A suitable temperature for high speed steels is approximately 2450 degrees F., at which temperature the tool will have a brilliant white color in the furnace. As soon as this is reached, the tool should be quenched at once as, if allowed to "soak" in the fire, it will become coarse grained and extremely brittle.

An excellent rule to follow when heating high speed steels is to apply the heat slowly up to, say 1600 degrees, or a cherry red. As soon as this point is reached the more rapidly the heat is raised to the required temperature the better for the tool. The above temperatures, while approximate only, need be varied but slightly with the different brands of steel. Most makers of this material recommend an exact temperature at which their steels will give the best results.

A very important point is uniform heating. A tool unevenly heated will be soft in spots which, of course, detracts enormously from its value when put to work. Another and most highly important point to observe is the necessity of heating a tool in a nonoxidizing atmosphere; in other words, one in which free oxygen from the atmosphere cannot attack the surface of the steel while highly heated. At temperatures above 2300 degrees oxygen rapidly attacks the steel, causing pitting and scaling of the work.

Quenching.

No fixed rule can be laid down for quenching tools made from the various brands of high speed steel that will work equally well in all cases. It has been the author's experience that fish or lard oil gives the best results for a great variety of tools. If quenched in water the grain will be coarse and unsuitable for use. Certain high speed or alloy steels, commonly called self-hardening steels, give best results when cooled by air blast. They should be heated in the same manner as other high speed steels and cooled by being held in a blast of air from a fan or other source. All above described tools reach their maximum efficiency only when the strain set up by such cooling is relieved by a drawing or toughening process. While many writers contend that high speed steel hardened at a temperature above 1700 degrees F. cannot be drawn except by annealing processes, the author has found that the strength and general efficiency of most tools are increased many fold by drawing to a blue color. This drawing does not seem to have the effect of reducing the hardness or cutting quality of the tool at all, but it does give sufficient toughness and strength to withstand uses that would destroy it were it not drawn but used as it came from the bath. Certain tools, by reason of their size, shape and the work that they have to perform need not be drawn.

Heating.

Granting that the above mentioned temperatures will give good results when quenched and drawn as described above, the problem yet remains to secure these temperatures under everyday conditions in the average workshop. With a coal or coke fire, even if extreme care is exercised, overheating is well nigh unavoidable. When such a fire is operated in connection with an air blast small tongues of highly heated flame attack one portion of the tool, bringing it rapidly to a temperature much above the part immediately adjoining it, with the frequent result that when quenched one portion of the tool has been much overheated, while another portion has not yet arrived at the proper temperature. Under these conditions it is also quite impossible to prevent the steel from becoming blistered and scaled by reason of a surplus of free oxygen in the flame. When crude oil is the fuel close regulation of the heat is difficult, and, as is frequently the case, sulphur and other injurious elements are introduced into the flame, which act on the steel to a disadvantage.

Of all methods of heating, the gas blast furnace seems to be the ideal one. When properly designed, a perfect combustion, under absolute control, can be easily maintained. Gas, composed as it is mainly of carbon and hydrogen, can be so regulated in relation to the amount of air blast introduced into the furnace with it that a perfectly nonoxidizing temperature can be maintained, thus insuring the work against the injurious attack of oxygen and carbonic oxide. Tools heated directly in the path of such a flame can be raised to the required temperature, and if quickly quenched will be absolutely free from scale or blister.

Results.

The enormous advantage of high speed steels over ordinary carbon steels on certain classes of work can only be fully realized with proper hardening. A case that will illustrate this point recently came under the author's observation. Two sets of blanking dies and punches made from the same bar of steel, one hardened in a coal fire and the other in a gas furnace, which when tested with a file showed relatively the same degree of hardness, were put to work blanking the same class of material under substantially identical conditions. One set, hardened in a gas furnace, punched 70,000 stampings before requiring to be reground, while the other, heated in a coal fire, required grinding after blanking 38,000 pieces. Upon examination the die heated in a coal fire bore evidence of having been unevenly heated, despite the care exercised, and was soft in spots. On the other hand, the die heated in a gas furnace, having been uniformly heated, presented an edge to the work that retained its shape and cutting qualities long after the other was too dull for use. The old saying that a chain is no stronger than its weakest link, applies here in the sense that a tool is no better than its softest spot.

The one hundredth anniversary of the opening of the port of Rio de Janeiro, Brazil, to international commerce is to be celebrated in that city next year by a national exhibition of industrial, pastoral and art products, from June 15 to September 7.

Statistics of railroad receiverships in 1907 show that only 349 miles of railroad, owned by nine companies, with total capital of $6,395,460, went into receivers' hands, as against 657 miles in 1906, last year's mileage being the smallest in four years.

THE IRON AGE

Established in 1855.

New York, Thursday, January 9, 1908.

Entered at the New York Post Office, as Second Class Mail Matter.

DAVID WILLIAMS COMPANY, - - - - - PUBLISHER
14-16 PARK PLACE, NEW YORK

DAVID WILLIAMS, - - - - - PRESIDENT
CHARLES KIRCHHOFF, - - - - - VICE-PRESIDENT
RICHARD R. WILLIAMS, - - - - TREASURER
GEO. W. COPE, - - - - - SECRETARY

CHARLES KIRCHHOFF, - - - - - - - - } EDITORS.
GEO. W. COPE, - - - - - - - - - } EDITORS.
A. I. FINDLEY, - - - - - - - - - } EDITORS.
RICHARD R. WILLIAMS, - - - - - - - - HARDWARE EDITOR.

The Iron Age Index.

The index to the reading matter of Volume 80 of *The Iron Age*, for July 1 to December 31, 1907, has been compiled and is now being printed. It will be mailed to those subscribers of *The Iron Age* who will make application for it.

To relieve those who bind or file *The Iron Age* of the trouble of future applications for the semiannual index, we have a special list of addresses to which the index is forwarded without further notice. Subscribers who desire their addresses entered upon that list will kindly so advise us.

Progress in Machine Tool Design.

From conception on, an idea is like a human being. The experimental stage is its babyhood, the promise of future success its youth and the approval of the world its maturity, until finally it is succeeded by a demonstrated improvement, even as an old man relinquishes his work to a more active one of younger years who has passed his probation. The percentage of mortality in infancy of inventions and discoveries is tremendous, as shown by a comparison of the birth record, the *Patent Office Gazette*, with the advertising pages of the trade papers as personals of the living. Lots of new things are tried—these are experiments—of which some come to commercial success, but more fail, chiefly because the inventor has been so engrossed merely with the attainment of a purpose that the elements of the practical side—first cost, maintenance expense, or sufficiently large demand—are overlooked, and these considerations must stand the test before capital can be interested. Leaving out the inventions that succumb, there remain the matured and developed improvements that constitute tangible advance.

The changes by which we are accustomed to measure progress occur more rapidly in some fields than in others. In the art of machine tool design, for example, one year may show a relatively small advance, but in five years the progress is readily apparent. The feature of the last five years has been the increasing of producing capacity demanded with the introduction of high speed tool steels, and this has had many subsidiary effects. By increasing the range of speeds, it made variable speed devices more necessary and many mechanical devices were brought out. Belt shifting was too inconvenient, and discouraged the operator from changing speeds as frequently as the most efficient cutting required. More and more are tools being equipped with easily variable speeds and feeds through mechanical devices, making dependence upon electric drive by variable speed motors unnecessary. Many have gone so far as to make all changes through gears, using a single main driving pulley instead of a cone pulley. Increased strength and power and more attention to lubrication, avoidance of frequent repairs and renewals and provision for adjusting for wear—all have been occasioned by the use of more efficient tools.

The first principle of all endeavor is economy, and conjointly with the attainment of greater producing capacity, labor cost has been reduced. The skill required to operate has been decreased, either by automatic devices which insure accuracy of themselves or by indexes to guide the operator in setting the work or the machine's movements. These include speed and feed changes, feed trips, safety devices, &c. An expert workman for each machine is no longer the rule. The new order of things is one expert, usually a foremen, to set up a number of machines for the first operation, and cheaper labor to watch them and replace each finished piece of work with a new piece; or, perhaps, one expert to start a series of machines in operation which attend to themselves thereafter until the supply of stock to be machined is exhausted or a change of work is necessary. A lesser degree of skill required is one saving, and another is saving of time in making the tool ready between operations. Controlling handles are now placed whenever possible within reach from one convenient position where the operator can keep the work in sight while manipulating them. This applies particularly to the frequently used levers, not to those that may be involved only occasionally.

Specialization continues to be the trend in moderate sized tools, making them capable of a large capacity of a limited range of product; certain of these are sometimes called "single-purpose" machines. The exception to this rule are universal machines capable of a variety of movements, but these are principally intended for heavy work that should have as many operations performed at one setting as possible. For very large work a practice is growing that may be properly accredited a development belonging to the last year or two, which is the setting of the work on floor plates in one convenient central location and bringing the tools to the work for performing the various operations. These tools belong to the growing class of portable tools, including both those that can be handled manually and those that require the service of a crane. Many of the smaller tools, particularly pneumatic hammers, drills, &c., have been in use for a long time, but tools too large for a man to hold while in use, or even to carry, are relatively recent. Electric drills and grinders have become of notable importance in late years, and motor drive of the larger portable tools has been perforce necessary; in fact, looking at it from the opposite standpoint, it may be said to have made possible the present portable boring bar, the big brother of the electric drill, and portable slotters, shapers, valve seating machines and others too numerous to mention.

Unsound Machinery Criticisms by Foreign Buyers.

American machine tool builders occasionally receive complaints from foreign users of poor workmanship in machines. Sometimes bills are forwarded for changes, such as replacing or improving parts. It may of course happen that there is just ground for such a complaint. Undiscovered imperfections may exist before leaving the shop, or injury may be received during shipment, and the expense of putting a tool in perfect working order

should then be charged to the builder. But there are also occasions where the criticism is based upon some condition that is intentionally embodied in the design, either because it tends to increase the effectiveness of the machine or because there is no good purpose to be served in finishing or fitting the part in question, or otherwise giving it mechanical perfection, especially when by so doing nothing would be accomplished except adding to the cost of manufacture. It is the opinion of American designers that many European machinery builders go to unnecessary expense by giving the same degree of accuracy and finish to unessential parts as to those where extreme perfection of design is imperative in order to secure sought-for results.

According to the ideas of the most advanced and successful of the American designers, including those to whose credit belong the most important precision tools, a machine should be considered by the work it is intended to perform, and not at all as to how it should look, except where grace of outline and degree of finish may be had at no important addition to cost. The greatest care is taken to differentiate between what may be termed the vital parts of a machine, which do the real work and secure its accuracy, and, on the other hand, those parts which, though necessary, do not work toward excellence of product. Cost is put into the former class of machine parts, to give them the nearest possible approach to perfection. Workmanship, materials, tools with which to do the work, are carried to the highest point of good practice. The second group of parts is manufactured as economically as possible, each piece being designed to be good enough for its function, with proper margin of safety, but not too good and consequently not too expensive. Abroad the tendency still is in many works to give the two groups almost equal workmanship. This, of course, works to the advantage of American competitors in the foreign market, for the additional cost which the European manufacturers impose upon themselves serves to nullify the advantage that they gain by cheaper labor.

Nevertheless, the American machine tool builder finds such conditions a source of annoyance and sometimes of expense. The customer abroad who discovers that some part of a machine is not fitted exactly, or is not quite in alignment, may scrape a surface or replace a cylindrical part or otherwise strive to improve that which is sufficiently accurate for its purpose, and then ask the builder of the machine to pay the bill. Naturally, some friction must result. The desire for perfection of details takes another even more disturbing form, according to the complaint occasionally heard, in its interference with the construction of some vitally important machine member, which has been worked out by the designer to precision of detail. It sometimes happens in machine construction that what seems to be indifferent design and workmanship is intentional. Cases are cited to illustrate the point. In one machine it was found after long and somewhat costly experiment that the only manner in which a certain very important mechanism would do its work exactly as required was to leave it loose, with poor fits, an almost "wobbly" construction. For some reason the mechanism worked perfectly to accomplish its object when so constructed. A foreign customer, in critical examination of the tool, discovered what to his eyes seemed a gross blemish in construction, and proceeded to remedy the fault by manufacturing a similar part, perfectly fitted throughout—a nice piece of mechanical workmanship. The machine was started up and the perfected part failed signally to do its work. The builder of the machine had had the same experience, and his remedy was embodied in the tool. Finally the original mechanism was put back and there was no more trouble.

No immediate remedy is possible in overcoming a form of difference begot from a variance in established custom and practice, except that of education. American tools are now so well established abroad that their characteristics are becoming well known everywhere that metal is fashioned by machinery. The inexperienced purchaser need have little difficulty usually in getting from his neighbors information as to what he may expect if he buys American machinery, and the American manufacturers need fear little from the reports that users of their tools will make of their quality. Experience teaches the lesson and remedies the troubles resulting from lack of understanding. New types of machinery must take their turn in the critical analyses of foreign engineers, who have not accepted the practice of the United States in designing machine tools on the basis of the greatest perfection where it is needed, regardless of cost, and the greatest possible economy where it may be applied without sacrifice to the product.

A Good Outlook for Lake Shipyards.

The statistics of vessel construction under contract at the lake shipyards at the beginning of 1908 show a contrast between that industry and the car and locomotive building industries. While many car and locomotive works are now running on orders placed in the early months of 1907 and have little new work in prospect, the lake shipbuilders have a very satisfactory programme of new construction ahead of them, besides an unusual amount and variety of repair work. It is true that much of the new vessel work was placed when the outlook for traffic on the Great Lakes in 1908 was much better than it is at present, and there were not the same storm signals flying in the lake trade that were in evidence in the great land transportation industry months ago, as legislature after legislature followed the lead of the powers at Washington. However, strong interests, whose policy is not determined by the developments of a single season, are behind these orders for lake vessels, and cancellations are not the fashion in the vessel trade.

Figures compiled at the beginning of the year show a total of 42 vessels under contract for delivery in 1908, including 26 bulk freighters, 2 passenger boats, 2 package freighters, 2 fireboats, 2 dredges, 1 car ferry, 1 fuel lighter, 1 lightship, 1 tug, 1 sandsucker and 3 hopper barges. This exhibit compares favorably with the record of launchings on the lakes last year, a total of 52 vessels having gone off the ways in 1907, 40 of which were bulk freighters. Thus the total of new work now on the books is numerically 75 per cent. of the vessels launched last year, and, taking only bulk freighters into account, represents two-thirds of the new coarse freight carrying capacity brought out in 1907. The *Marine Review*, which has gathered the above statistics, thus summarizes the additions made in recent years to the Great Lakes fleet:

Forty bulk freighters were put overboard in 1907, having a carrying capacity of 368,000 gross tons on a single trip, or 7,220,000 tons in an average season of 20 trips. In the past six years vessels having a gross carrying capacity of 29,773,200 tons in a full season have been added to the Lake fleet. The 1908 programme will increase this to 33,867,200 tons, which is greater than the total movement of ore in any one year up to 1905. With the exception of the Tonawanda Iron & Steel Company, none of the great ore producing and steel making companies figure in the 1908 programme. The vessels are all building for independent interests. There is noted also a decided preference for the 8000 and 9000 ton ship, only six in the lot being larger than this.

No doubt the old question, Where will all the boats find cargoes? will be asked many times in the season of

1908. Vessel owners have become quite hardened in recent years to the bringing out of this bugaboo that used to produce the desired effect on weak kneed owners at chartering time after a long winter. The lake carrying outfit is still in process of making over, a process that involves the eventual elimination of boats of small capacity from the coarse freight trade. A single season, following a period of unexampled activity, may give the impression that vessel building is being overdone, but the example of the leading steel interest in providing steel making capacity against the future needs of the country has a direct application to the lake traffic. What on its face seems strange is that merchant vessel firms should furnish nearly all the business in new freighters for 1908; but it is to be remembered that the ore producers were prodigiously active as patrons of the shipyards in the three years beginning with 1905, and that their orders in 1905 particularly were the marvel of the vessel trade of the lakes. It is evident that the independent vessel owners are not yet in serious fear of the absorption of the lake carrying trade by large corporations which consume what they carry.

CORRESPONDENCE.

Steel Ingot Uniformity.

To the Editor: On page 1828 of *The Iron Age* of December 26, Dr. Charles B. Dudley considers the discard requisite for uniform integrity in steel rails. I beg to remark that if 18 per cent. is cut off the top of an ingot cast vertically the remainder, 82 per cent., will still differ in density, becoming more compact by degrees until the bottom is reached. There cannot be uniformity in an ingot cast perpendicularly. But cast an ingot on the horizontal, say, 8 in. square and 3 ft. long, cut it into half a dozen different lengths, and each will be found practically uniform. Mr. Bessemer considered that he could make iron by the process still in vogue—developed, of course. He did not succeed. Mr. Mushet told him to use spiegel. I hammered at a steam hammer the first ingot he ever made. A duplicate of that ingot may be found in the Kelvin Grove Museum, Glasgow, Scotland. It was almost as fragile as a red brick. A small portion only could be saved, hammered 4 in. square and rolled into a ½ in. round. Just the same now as then, the bottom part of the ingot is the best. Hence, I suggest that uniformity can only be secured by casting the ingots horizontally. The occluded gases, silicate floss, &c., which enter into cavities—inevitable to contraction in the interior, while the exterior has been chilled against the surface of a cold mold—would be eliminated, simply because all the excrescences, being lighter than the solid metal, must rise to the surface, where they are accessible and may be controlled. It has been said that open hearth steel would be more satisfactory than Bessemer. But J. J. Hill of the Great Northern Railroad has said it breaks more readily than Bessemer. I realize that this is a great problem, involving immense outlay, and submit my views with diffidence and trust they may be of some value.

JOSEPH PARKES.

MINNEAPOLIS, January 2, 1908.

Freight Overcharges.

To the Editor: Your editorial in issue of December 26 entitled "Freight Overcharges," has been read with much interest. In this connection I would like to submit the manner in which we handle this particular business.

Each morning our office calls the different railroad cashiers over the telephone and secures the amount of freight due, and checks are sent each day to cover. On receipt of freight bills they are assembled with the invoices and bills of lading covering the different shipments. The next step is the checking of freight charges as shown by freight bills. When overcharges are discovered the overcharge is submitted to the rate clerk in the local freight office, and we have him O. K. it. Unless the overcharge originated with their connecting lines, the railroads pay these amounts in cash at their office. In the event that the overcharge originated with a connecting line we do not file a formal claim, but leave the freight bill with the rate clerk and keep a cash ticket against the railroad company for the amount. In nearly every instance, as soon as the connecting line acknowledges the overcharge, we receive a voucher to cover our claim. When a formal claim is filed there is no doubt that it becomes a thing of the past or future, whichever may be most convenient.

There is no doubt that most of the trouble existing between shippers or consignees and the railroad companies is due to a lack of team work. Railroad employees are only human, and as such are liable to err in their work as well as clerks in mercantile offices, and surely there is no mercantile office that has not fully taken advantage of its quota of errors, especially in billing. Let us give the railroad rate clerk a chance to correct his errors. Let us go to him as we would have our customers come to us—in a pleasant manner—and above all things let us take the chip off our shoulder before we go in his office. If we would cut out the general feeling of antagonism against railroads and give the employees a fair chance it would certainly clear the atmosphere surrounding our dealings with the local offices. We have tried very hard to carry out the above rules, and our relations with the different agents in this city are more than agreeable.

W. J. FRITTS,
Tom Fritts Hardware Company.

CHATTANOOGA, TENN., December 27, 1907.

To the Editor: We have read with much interest your editorial in issue of December 26 on "Freight Overcharges." Your remarks are pertinent, and we hope you will continue to agitate the question until some relief is afforded.

We recite an incident on a shipment of steel from an Ohio River point to an Alabama point, it being a prepaid shipment. It traveled over several different systems of railroad, and the delivering line presented an expense bill for its proportion of the freight, which was paid by the consignee and charges deducted from the invoice value of the goods. Claim was made upon the railroad company for a refund, and with the usual "Pigs is pigs" (presume you have read it) tactics on the part of the railroad, we finally placed the claim in the hands of our attorney for collection, the result being that very shortly a tender of the amount of the overcharge was made and has been made several times. It being such a case of gross negligence we have insisted on the full amount of the overcharge, with legal interest from date, and we are going to see the case through.

We believe it would be well, if you care to pursue the matter further through your editorial columns, to bring up the question of "Why interest should not be paid by a railroad upon all overcharges." We believe if all shippers would insist upon the payment of interest as well as principal in all overcharge cases, that the railroads would soon be much more prompt in settling such claims.

MANUFACTURER.

December 27, 1907.

The Lash Steel Process.—The building formerly occupied by the Acetyvone Company on the lands of the Niagara Falls Power Company, Niagara Falls, N. Y., has been acquired by the Lash Process Company and the Canadian Lash Steel Process Company, for the purpose of making an exhaustive experimental study of the application of electric furnaces to the Lash process. The Lash steel process is a method developed by Horace W. Lash to cheapen the cost of ordinary mild steel by entirely eliminating the use of scrap, decreasing the amount of pig iron and substituting therefor a special mixture. It is stated that in this mixture the cost of the iron content of the furnace charge is very much less per ton than in the case of ordinary open hearth furnace mixtures. The tests at Niagara Falls will be carried on with an electric furnace of the Héroult type, using 1000 hp.

The Dire Cost of and Best Remedy for Carelessness.*

In the Foundry, Shop, Transportation and Traveling.

BY THOMAS D. WEST.

Our esteemed President, in his address at Jamestown and his recent message to Congress, signals a movement that will no doubt eventually be national in rendering greater security to life and property and the reimbursing of sufferers from accidents. In the writer's experience the measures advocated by the President in dealing with this great evil are not advisable in placing costs, or as a preventive of accidents, the latter being the chief factor all should seek.

As Many Casualties in Times of Peace as in War.

There are on the average about as many appalling casualties in times of peace as in war, but much less thought and attention are given to their dire afflictions, for the reason that the slaughter and costs are by units and spread over months, whereas those of war are by thousands spread over but a day. The soldier leaving his home for the seat of war bids farewell to his own with grave fears of ever returning, whereas the civilan has no preparation or thought of death, but without a moment's warning may be stricken down and generally because of the carelessness of some fellow being or of himself.

When we seriously consider the hundreds of thousands that are maimed and killed annually by accidents, is there any subject that should cause a greater degree of research to get at the root of its evil, and if possible implant customs and enact laws that will afford civilians in times of peace greater protection, or more assurance that they will not be brought home maimed or killed in a short time after leaving it in happiness and vigor? When a person is crippled for life or meets an untimely death it is a fate that can seldom be paralleled by any other misfortune that may befall a human being.

In times of war the Church and State become aroused; armies spring into existence and the masses become absorbed in the thought of the great sacrifices of life that will be made in efforts to save the home and the country. Very few sit in ease and contentment, indifferent to the outcome of the struggle. Almost all people become apprehensive of serious results, and as a body are ready to labor and to make sacrifices in an effort to lessen or stop the dire adversities of war, but what is said of the dire adversities of peace when about 600,000 beings are maimed or killed annually by accidents in one country alone, as is the record of the United States of America?

Efforts to Hold the Employer Responsible.

The November number of *Everybody's Magazine* published an article by William Hard on "The Making of Steel and Killing of Men." Like many other articles which the writer has read, it advocates placing the whole cost, responsibility or blame upon the employer, and expecting him to do a work that should have been done in the school and home, or developed before the youth becomes an adult. As for getting at the root of the chief cause of accidents, such writers are as far off the mark as an archer would be in missing a barn, to say nothing about the practicability of any good remedy they have suggested.

It is right and just to hold an employer responsible when he does not provide the best safeguards to life and limb that can practicably be devised, but unless we enact laws that provide for fining and imprisoning a person for carelessness, we will never be guaranteed the protection than can and should exist to decrease greatly our loss of life and property through this cause. What can be conducted in Europe as to the liability of employers cannot be done as justly in America.

It is safe to say that where there is one casualty in Europe caused by the downright carelessness of the employees, there are nearly half a dozen in America. Why? Simply because the American employee is less careful, more flippant and indifferent to his duties. In fact, as an example, if in a railroad crew or a shop's gang, one of their number exhibits any great interest in being careful or economical, he is generally derided and in time often expelled from among them, and made to seek another situation. The "don't-care" spirit is so prevalent in America that the foreigner, who at the start exhibits much seriousness in aiming to be careful, is in a short time often worse than the native, for the reason that many know no bounds when they discover the flippancy that is tolerated and so often common to many workers, a defect which is imbibed in their youth, chiefly through the American spirit of independence, buoyancy and pleasure seeking, which tends to create a nation of "don't cares," "smart alecks," and "sports," instead of earnest, careful workers. In passing, it is to be said that the qualities generating carelessness in workers are much more pronounced in prosperous than dull times, which greatly accounts for the increase of casualties in the past five years referred to later on.

One effect of the training just cited is also exhibited by our Fourth of July celebration. As shown by Mrs. Isaac I. Rice, originator of the society for the suppression of unnecessary noise, 5000 persons were killed last Independence Day, and hardly any notice was paid to it. Had it been a battle, with less than one-fifth of 5000 injured, every tongue in the land would have commented upon the deplorable killing and maiming of men.

Statistics of Casualties Through Carelessness.

The writer's claim of there being more casualties in our country than in Europe through carelessness is well sustained by Secretary Garfield's commissioners' report given later on, as well as by E. B. Phelps' able article on "America's Lead in Railroad Accidents" in the *World's Work* of November. Here a careful collection of statistics shows that the number of casualties in train accidents for each 100,000,000 passengers carried for the years 1901-1905 was 31.64 killed and 72.23 injured in the United States, as against 1.27 killed and 4.88 injured in the United Kingdom. Mr. Phelps states that "investigation shows that the increase of accidents of late years has proportionally far exceeded the increase in density of volume of traffic," and farther on says that "the primary cause, in the opinion of all men who have studied the subject, is the recklessness of the American temperament manifested alike by the railroad president and the railroad trainmen," and also claims that "organized labor" is responsible in a secondary manner.

Heretofore there has been a universal propensity on the part of the public press and politicians that cater to the working classes for patronage to lay the blame of all casualities on the employers and to make demands, like our President, that all the costs and responsibility be saddled upon the employer. It is certainly encouraging to note such an expression as was given publicity by the Cleveland *Leader* of December 11, when with large headlines it stated "Big Disasters—Miners' Fault," and in which Rev. S. Von Krug, in referring to the killing of over 400 miners in the recent appalling disaster at the Monongah collieries, asserts that in living 25 years in the coal mining country he found that the great majority of mine disasters were the result of carelessness on the part of some individual miner.

Secretary Garfield's commissioners, in examining coal mine disasters of the United States, assert, as found in the Cleveland *Leader*, December 19, that our country is killing three times as many men for each 1000 employed as those of most European countries, but claim that the accidents are due to ignorance. The writer's experience in handling men and machinery for over 30 years credits but a very small percentage of accidents to ignorance or stupidity, compared with sheer carelessness by persons of fair and often very good intelligence.

The Subject Is One of Popular Interest.

The occasional appearance of such courageous expressions as that of Rev. Mr. Von Krug, that disregard public politics and press patronage by our great popular dail-

*Read at the meeting of the Philadelphia Foundrymen's Association, Philadelphia, Pa., January 8, 1908.

ies, will have an immense weight in aiding employers and others to prevent accidents, and which should certainly concern the masses as much if not more than how to pay for them, if they will but take a common sense view of the subject.

Page after page could be written about accidents caused by the carelessness of people that no possible provision of safeguards on the part of employers could have prevented, and such accidents are occurring by the thousand daily in this broad land of ours. If one wishes to surprise himself in obtaining an inkling of what exists to jeopardize the limbs and life of the civilian leaving his home for recreation or labor, let him clip and study the reports of accidents from several of our large daily papers for one month. A person who will do this will find himself doing some serious thinking on one subject, and such that must greatly alter any previous views on it.

When people come to weigh seriously the manner in which they jeopardize their lives, and how indifferent they are to a subject that should engage the best attention of all civilians, they cannot but marvel at the lack of public interest in the past in what is truly a dire adversity in time of peace. Some employees may look upon this paper as being written in the interests of employers, but any who will do this are very blind to their own interests. What can be of greater benefit to any person than taking an interest in getting at the root of what is essential to best prevent their own persons from being maimed or killed? What father, mother, son or daughter upon leaving a home has any positive assurance of returning unmaimed or alive? It may be one's own or another's carelessness that may send them without a moment's warning into the great unknown or be crippled for life. The guarding against accidents cannot be disputed as being of as much importance to employees as well as to employers, and both should strive to diminish their occurrence and to do what is necessary to enhance the best protection against the present dire adversities of peace.

The Careless Employee and the Inconsiderate Employer.

To obtain the best protection, or to decrease present risks of losing life or limb to any appreciable extent, we must see to it that the careless employee can be publicly censured and punished as well as the inconsiderate employer. To hold either one wholly responsible and let the other go blameless would be as gross an injustice and impracticable procedure in remedying a world's great evil as any other that is recorded in the annals of civilization.

This subject also involves the great cost attached to the destruction of property through carelessness. Much is written upon the ravages of war being so destructive of wealth that the cost of living greatly increases, depriving the ordinary worker of many of the comforts and luxuries of life. How many give any thought to the ravages of peace by the destruction of property through carelessness? As an example of this, it is estimated that fires started by carelessness in throwing away burning matches and cigarettes cause New York City a loss of about $2,500,000 each year. This great metropolis has a population of about 4,000,000, and taking its losses as a basis for all the cities of the United States, we have something like a loss of $53,000,000 through carelessness in the use of matches and cigarettes alone. This, it must be remembered, includes only the ordinary daily fires, and does not take into consideration the great conflagrations like the recent Baltimore fire, some of which have been started through carelessness.

Considering the subject of losses by manufacturers through carelessness, it is safe to figure that breakage and other losses caused by operatives' carelessness are, on an average, fully $20 per employee each year. Allotting one-sixth of the population of the United States as being employed in manufacturing, we have a total loss of about $28,000,000 from this class of employment. Add to manufacturing the work of the farmer and domestic labor, and the grand total can easily reach $150,000,000 that could have been saved to the people and added yearly to our nation's wealth, had there been due care exercised in the labors or actions of the people.

Founders Would Be Benefited Greatly by More Carefulness.

While on the subject of losses caused to manufacturers, &c., through carelessness, there are few, if any, that could be benefited by due heedfulness on the part of workers more than founders. It is a question if losses in bad castings through carelessness or inattention are not greater than losses through ignorance or want of skill on the part of molders, and that losses through carelessness per dollar of output for inferior or bad work exceed those of other lines of manufacture.

As the first organized step to make the subject of carelessness one of national issue along educational lines few measures, if any, could be more beneficial than to have our various foundrymen's associations take up the work of collecting statistics of shop accidents and losses caused by individual carelessness, so that those outside of the actual control of manufacturers could have facts to influence moral support in portraying the chief cause of casualties, and thereby aid other socities and organizations to influence legislative bodies in enacting laws and devising other agencies that would be very helpful in greatly decreasing present day casualties and insure a greater lease of life and preservation of limbs to all civilians. The above is merely a suggestion given with the belief that actions not words are what we must chiefly look to in order to achieve the reform in carelessness that should and can be brought about.

To reduce the present great loss of life and limb in connection with that of property, some may say, use the power of discharge to discipline workers. This would help in dull times, but in brisk periods, like the past five years, when a man had to walk but a few streets to find a dozen positions awaiting him, this would have little restraint.

It would seem that with the 600,000 persons who are maimed or killed, in connection with the $150,000,000 worth of property lost yearly, and chiefly through carelessness, there would be a universal awakening to apply needed remedies. There could be better discipline in our homes and schools and societies, for the development of carefulness could be formed, but the most effective remedy that can be had would be to enact laws whereby any guilty party, whether employer or employee, can be summoned to answer charges for carelessness, and be liable to fine and imprisonment for any accidents of which they may be the cause. To support such laws we will have to educate popular opinion, as by reading such papers as this, and by the presentation of actual facts demonstrating that the great majority of accidents are due to sheer carelessness of individuals.

An Injustice to Business Men of Small Capital.

Another phase of this subject is the effect that the placing of the whole responsibility and cost of employees' injuries on employers would have in debarring many with small capital from starting in business for themselves. It would kill most of such prospects for many, and few movements would do more to help make this strictly a rich man's country and take from us present advantages which permit many employees to become proprietors, all for the reason that no one of small means would dare risk his hard earned savings to help pay for an unfortunate man's life or limbs lost through some chance accident that was beyond his employer's control.

Some will claim that employers' liability insurance companies can be relied upon to protect employers in paying their costs of accidents. Make the new Pennsylvania law for holding proprietors wholly universal in our country, instead of the old law which excused an employer, if negligence on the part of an employee could be proved, and these insurance companies would in a few years be a thing of the past, or their rates would be so high that a small beginner could not spare the capital necessary to insure himself. Whichever way we turn, the plan of loading the whole responsibility and cost upon employers for accidents is an ill advised one, and, like a boomerang, will turn to injure also those that believed themselves furthest from harm. The courts can heavily fine the employer and those who can carry the load will

endeavor, if possible, to make the consumer pay, thereby still further increasing the cost of living. How much more sensible for all to labor for every possible removal of the chief cause of accidents, which is individual carelessness, and hereby save our country's great loss of life and limb, as well as the many millions of dollars of the people's money.

The endeavor to place the whole responsibility and cost due to individual carelessness upon the employer will have little weight in this country in preventing accidents under the present régime. It suggests the question if the public is satisfied to continue enduring its loss of millions and further lessen opportunities for small capitalists to start business, as well as taking the hazardous risk of life and limb that they must under the present unpunishable dire carelessness of so many of our employees and unresponsible civilians.

Connecticut Industrial Dividends.

A banking house of Hartford, Conn., has prepared a list of dividends declared or to be declared by corporations of that city and vicinity, which tell of most prosperous results of recent business, in most cases comprising the last quarter of 1907. Among them are:

The American Hardware Corporation, New Britain, 1¾ per cent. quarterly; Billings & Spencer Company, Hartford, 1½ per cent. quarterly; Colts Patent Fire Arms Mfg. Company, 1¼ per cent. quarterly; Collins Company, Collinsville, 4 per cent. semi-annual; Eagle Lock Company, Terryville, 3 per cent. quarterly; Johns-Pratt Company, Hartford, 5 per cent. quarterly; Landers, Frary & Clark, New Britain, 2 per cent. quarterly, and extra 6 per cent.; New Britain Machine Company, New Britain, 1½ per cent. quarterly; Pratt & Cady Company, Hartford, 2½ per cent. quarterly; Peck, Stow & Wilcox Company, Southington, 2½ per cent. quarterly; Stanley Works, New Britain, 2 per cent. quarterly; Standard Screw Company, 3 per cent. semi-annual, both common and preferred; Stanley Rule & Level Company, New Britain, 2 per cent. quarterly, and extra 3½ per cent.; Traut & Hine Company, New Britain, 1½ per cent. quarterly, and extra 2 per cent.; Union Mfg. Company, New Britain, 2 per cent. quarterly; Whitlock Coil Pipe Company, Hartford, 1¾ per cent. quarterly.

The Trade Co-operative Committees.

The following names have been added to those recently printed as members of committees to secure conciliation and co-operation in the iron and steel trade:

Ore and Pig Iron: W. A. Rogers, president Buffalo & Susquehanna Iron Company, Buffalo, N. Y.

Sheet and Tin Plate: Thomas K. Niedringhaus, president National Enameling & Stamping Company, St. Louis, Mo.; James A. Campbell, president Youngstown Sheet & Tube Company, Youngstown, Ohio.

Pipe and Tubular Products: I. M. Scott, president La Belle Iron Works, Steubenville, Ohio.

Electrical and auxiliary manufactures for 1907 are estimated by the *Western Electrician*, Chicago, at $315,920,000, this being a slight decrease from the total for 1906, but an increase of about 30 per cent. over 1903. The decline for 1907 has been anticipated, and seems to have been chiefly in the line of new construction. Wire and cable manufactures for the year amounted to $88,625,000; dynamos and motors, $74,000,000; telephone apparatus, $28,500,000; lamps of all kinds, $13,125,000; cars, trucks and railroad supplies, $15,700,000, and prime movers, $27,750,000.

The McKeesport Tin Plate Company, McKeesport, Pa., has started up its tin mill plant on full time, giving employment to about 700 men. This company enjoys the distinction of having the largest independent tin plate plant in the country. It contains 12 hot mills and 10 cold mills. The company expects to be able to operate full time for some months.

November Exports and Imports of Iron and Steel.

The official figures of our foreign trade in November, just issued by the Bureau of Statistics of the Department of Commerce and Labor, do not bear out the impression which gained currency during that month that the exports of iron and steel were on an unusually large scale. It appears that, as compared with October, the exports slightly declined, while the imports increased. The total value of the exports of iron, steel and manufactures thereof, not including ore, for November was $17,051,755, against $18,951,198 in October. The value of similar imports in November was $2,623,551, against $2,419,184 in October.

Taking the commodities for which quantities are given, the exports in November totaled 116,308 gross tons, against 123,216 tons in October, 115,869 tons in September, 118,944 tons in August, and 121,400 tons in July.

The following table gives details of the exports of these commodities for November, and for the 11 months ending with November in 1907 and 1906:

Exports of Iron and Steel.

	November.		Eleven months.	
	1907.	1906.	1907.	1906.
	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron	6,184	9,589	70,740	75,052
Scrap	689	671	24,966	10,602
Bar iron	1,473	4,308	23,236	51,260
Wire rods	268	164	10,524	5,849
Steel bars	6,497	4,172	69,848	29,316
Billets, blooms, &c.	8,698	5,847	74,831	186,479
Hoop, band, &c.	1,013	200	7,244	4,369
Steel rails	30,141	23,869	318,143	296,879
Iron sheets and plates	4,615	2,177	36,689	15,441
Steel sheets and plates	6,365	10,071	76,855	87,480
Tin and terne plates	512	445	9,900	11,502
Structural iron and steel	11,267	9,217	129,041	102,677
Wire	15,355	16,652	147,653	160,822
Cut nails	830	357	6,567	7,111
Wire nails	1,990	2,436	39,685	44,044
All other nails, including tacks	654	537	7,285	4,906
Pipes and fittings	19,757	8,713	163,365	132,075
Totals	116,308	99,425	1,216,572	1,225,864

Turning to the imports, the quantity figures for November totaled 35,255 gross tons, against 21,223 tons in October, 40,682 tons in September, 51,700 tons in August and 75,406 tons in July. The following table shows the details of the imports of these commodities for November and for the 11 months ending with November in 1907 and 1906:

Imports of Iron and Steel.

	November.		Eleven months.	
	1907.	1906.	1907.	1906.
	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron	19,408	39,751	478,448	305,416
Scrap	897	7,249	26,516	18,379
Bar iron	3,093	2,704	35,854	31,458
Rails	107	958	3,551	4,655
Hoop, band, &c.	31	238	1,467	10,200
Billets, bars, and steel in forms, n.e.s.	5,397	2,071	18,441	19,139
Sheets and plates	313	169	3,517	3,055
Tin and terns plates	4,385	5,094	56,231	48,940
Wire rods	1,512	1,188	15,806	16,269
Structural iron and steel	112	1,248	2,271	27,872
Totals	35,255	60,670	642,102	485,383

The total value of the exports of iron and steel and manufactures thereof, not including ore, for the 11 months ending with November was $182,068,912, against $157,755,080 in the corresponding period of the previous year. The imports in the same time were respectively valued at $36,740,432 and $30,840,473. The quantity of iron ore imported in the 11 months ending with October was 1,149,129 gross tons, while the exports for the same period were 261,469 tons.

Judge E. H. Gary, chairman of the United States Steel Corporation, announced after the meeting of the Finance Committee January 7 that a price of $87.50 per share has been fixed at which employees can this year subscribe for the preferred stock under the profit sharing plan. This compares with a price of $102 for 1907.

Congress to Enact a New Census Law.

WASHINGTON, D. C., January 6, 1908.—Manufacturers in all industries will follow with interest the movement soon to be undertaken in Congress to secure the passage of a bill recently introduced by Representative Crumpacker, of Indiana, providing for the taking of the Thirteenth and subsequent decennial censuses. The bill is now before the House Committee on the Census, of which its author is chairman, and it is expected that the measure will be put through during the present session, or in any event during the present Congress. The Thirteenth Census, as applied to manufactures, will cover as nearly as practicable the calendar year ending December 31, 1909, and the schedules therefor will be prepared by the Census Bureau during the coming fiscal year.

The Crumpacker bill has been prepared with great care, and is an exceedingly comprehensive measure. Provisions of special interest to manufacturers have been incorporated, conferring authority upon the Director of the Census to frame inquiries and to compel manufacturers to answer them under severe penalties for refusal to do so, or for supplying false or misleading information. The statute under which the census of 1905 was taken penalized the refusal to furnish information, but acting upon the advice of the law officers of the Department of Commerce and Labor, and also moved by a desire to secure the co-operation of the manufacturers of the country in obtaining a complete and accurate census, the Director decided not to invoke the law in any case, but to rely upon negotiating through the medium of special agents to secure the desired data and in nearly all cases these methods proved successful.

The new bill outlines the scope of the schedules of inquiry to be used for the next census, to be confined to mines and quarries and manufacturing establishments which were in active operation during all or a portion of that year and had a product valued at $500 or more, and further confined to manufacturing establishments conducted under what is known as the factory system, exclusive of the so-called neighborhood and mechanical industries.

A special provision of the bill makes it a misdemeanor to refuse to furnish information desired by the Census Bureau and provides heavy penalties therefor. This section of the bill is as follows:

> Any owner, president, secretary, director, agent or other officer of any manufacturing establishment, mine, quarry or other establishment of productive industry, who under the conditions hereinbefore stated shall refuse or wilfully neglect to answer any of these questions, or shall wilfully give answers that are false, shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not exceeding $10,000 or imprisoned for a period not exceeding one year, or both so fined and imprisoned, at the discretion of the court.
>
> All fines and penalties imposed by the proposed law are to be enforced by indictment or information "in any court of competent jurisdiction," which is understood to mean any Federal court in the district in which the parties refusing to comply with the law may reside.

Mr. Crumpacker has also incorporated in the measure a provision for the protection of manufacturers, which forbids the Director of the Census to publish or disclose any statistics regarding individual operations. Employees who make public information received by them in their official capacity are also punishable by fine and imprisonment.

In the enactment of the Crumpacker bill it is not the intention of Congress to delegate to the Director of the Census the power to prescribe arbitrary and unreasonable regulations with a view to forcing manufacturers to furnish information contrary to their best judgment as to what data may properly be communicated to the bureau and its representatives, and although the terms of the Crumpacker bill give the director a wide discretion, manufacturers may be assured that it will not be improperly exercised.

W. L. C.

The Terre Haute Shaft Coupling & Novelty Company has been incorporated at Terre Haute, Ind., with $40,000 capital stock, to manufacture novelties. The directors are C. B. Brown, N. M. Ely and T. J. Martin.

Judge Gary's Forecast.

Judge E. H. Gary, chairman of the United States Steel Corporation, contributed the following to the annual review of the New York *Times*, issued January 5:

The renewal of conditions which preceded recent unpleasantness and doubt is near at hand, and I look for an era of prosperity when confidence is fully restored, as it unquestionably should be without delay. The basis for a renewal of activity is markedly strong. The mining and shipment and marketing of pig iron and finished steel have been greater than in any previous year, more men employed, a higher scale of wages paid, and more profits realized. The country's wealth has increased and gold to the value of $8,000,000 a month is being produced in the United States alone. What is necessary for a permanent improvement in the finances of our country is proper management and economy. The conditions are excellent, and conservative direction and keener scrutiny are needed to insure a long continued period of prosperity. There need be no fear that the wealth of this country is diminishing. The exports for 1907 exceeded the imports by $400,000,000, and the value of farm produce and mining output will reach the magnificent total of $10,000,000,000. These are figures which may well inspire courage and confidence as to the future of our republic.

It would be well, too, to modify ambitious views with regard to results and not to expect extravagant returns on moderate outlays, always bearing in mind that, according to sound business principles, there is danger where large interest is returned on comparatively small investments. Violent changes in legislative enactments are to be deplored; legal remedies should be applied slowly.

The recent tempest has in a great measure purified the financial atmosphere. The demands of the law have been made clearer and forcibly emphasized. The men who are engaged in great financial enterprises are taking more wholesome views of what they owe the public and are establishing more dignified, and certainly more righteous, regard for their own obligations. In this way values will be largely increased and will not be liable to wide and sudden fluctuations.

There was a time when a spell of bad weather meant unfavorable crop reports, which reacted on the securities market and business generally. To a very considerable extent the possibility of serious crop damage is minimized by an extension of area, and as agriculture moves further out so does the likelihood of a general climatic influence cease to exist.

A word as to industrial co-operation and the consolidation of interests in certain industries. There is no intention in recent iron and steel developments to destroy or restrict competition or to control the market by any nefarious process; on the contrary, it is sought to stimulate competition in every way, open and fair competition and fair dealing.

The power of the press in restoring confidence is of the utmost value. The press has in the discussion of important problems done its duty to the public, and to a very great extent the reform in conditions is due to its sleepless vigilance. The object being obtained, the newspapers can help much to instill into the public mind a sense of security and contentment, and they are doing so with a full appreciation of the worth of the information at their command.

My view of the future, based as it is on the conditions of the iron and steel industries—and these are the barometers by which we read—is optimistic, and I look for an immediate improvement in all spheres of commercial enterprise.

New issues of stocks and bonds in Germany in 1907 amounted to only $460,500,000, as compared with $703,250,000 in 1906. Of these issues only $60,000,000 were industrial shares, which in 1906 amounted to $156,000,000.

Trade Publications.

Tools.—Charles H. Besly & Co., 15 South Clinton street, Chicago, Ill. D catalogue, 1908. Size 6 x 9 in.; pages 335. Cloth bound. Describes and illustrates the company's full line of products and is unique in the logical sequence of its contents. The first pages are devoted to brass and copper in sheet, rod, wire and tubing forms, and following this drills, reamers, taps, dies, screw plates, chucks of all forms, screws, wrenches, files, vises and clamps are dealt with. Various lines of small tools as used in metal working shops and laboratory specialties, tool holders, tool chests and engineers' supplies are next listed. Some 42 pages are devoted to Besly spiral disk grinders and Besly band wheels, showing new forms and types. Next follows plating and polishing supplies, grease cups, parallel clamps, oil cups and Helmet oil, the various applications of which are shown. Lists of useful tables of goods shown in the catalogue and a complete index are included.

Wire Drawing Machines.—W. Gerhardi, Lüdenscheid, Westphalia, Germany. Folder. Gives a description of the Nos. 0, 00, 1, 2, 3, 4 and 5 multiple drawing machines, with illustrations of the Nos. 0, 2 and 3 machines. Patent friction blocks are also illustrated.

Bench Lathes.—Stark Tool Company, Waltham, Mass. Catalogue. Size 5¾ x 8¾ in.; pages 40. Contains descriptions in English, German, French and Spanish of the company's various types of bench lathes, pinion cutters, profiling machines, milling machines, damaskeening machines, &c.

Traction Engines.—C. H. A. Dissinger & Bro. Company, Wrightsville, Pa. Catalogue B. Concerns the Capital gasoline traction engines, built in sizes from 16 to 80 hp., with any number of speeds forward or backward. The parts are illustrated and described separately, and specifications are given on an appended sheet.

Tobin Bronze.—Ansonia Brass & Copper Company, 99 John street, New York. Pamphlet. Refers to Tobin bronze and its advantages from the standpoint of strength and ability to resist corrosion. Testimonials are included.

Boring Mills.—Gisholt Machine Company, Madison, Wis. Pages 79 and 80 for insertion in binder. Deals with tool equipment for a 30-in. vertical boring mill, which is shown finishing valve openings and automobile crank cases.

Optical Pyrometers.—Morse Thermo-Gage Company, Trumansburg, N. Y. Pamphlet. Describes the Morse thermo-gage, an optical pyrometer adapted to read temperatures of materials heated to any degree of incandescence. Recent improvements are a telescopic form which may be held in the hand or on a fixed or movable support, and provision for inserting Jena Rauch glass for reading the highest temperatures, or Jena copper red glass for gauging the temperatures of such substances as molten brass, which have a peculiar color, by permitting only the red rays to pass to the eye.

Derails.—Hayes Track Appliance Company, Geneva, N. Y. Circulars. No. 47 describes Hayes model F. portable derails, for use where it is desired to install a derail temporarily without spiking it to the ties, and No. 48 gives some new pictures of Hayes derails in track.

Power Pumps.—Goulds Mfg. Company, Seneca Falls, N. Y. Catalogue. Size 4½ x 8½ in.; pages 48. Gives illustrations and descriptions of Goulds pumps and buildings in which they have been installed, such as apartment houses, theatres, hotels, office buildings, &c., and pumps in connection with railroad and hydraulic elevator service. Mill, power plant and mine pumping installations are also shown, and illustrated descriptions with specification tables of the various types of pumps are given.

Motors and Electrical Equipment.—Sprague Electric Company, 527 West Thirty-fourth street, New York City. Four bulletins. No. 108 pertains to electric dynamometers for testing gasoline engines. No. 229 (74 pages) gives descriptions and illustrations of direct current electric motor equipments for printing, electrotyping, stereotyping and binding machinery. This line includes the company's enclosed and semi-enclosed type D direct current motors, round type motors and small motors from 1-20 to ¼ hp. Controllers for electric motor driven printing machinery are shown, and illustrations of these motors in connection with numerous types of machines are included. No. 230 contains a reprint from the *Electrical World* entitled "The Electric Equipment of a Modern Factory," describing the plant of the F. Wesel Mfg. Company in Brooklyn, N. Y., and is an example of the application of Sprague products to factory work. No. 231 refers to direct current motor equipments for single or double magazine Mengenthaler linotype machines.

Steam Turbine-Generators.—General Electric Company, Schenectady, N. Y. Bulletin No. 4531. Size 8¼ x 10¾ in.; pages 29. Illustrates and describes the construction and operation of the Curtis steam turbine-generator, and gives interesting information with respect to superheat, vacuum, economy, &c. Tests of 9000, 5000, 2250 and 1000 kw. turbines are reported, showing some remarkably high efficiencies. The descriptive matter calls special attention to the flat efficiency curve, giving high efficiency at overloads and light loads, the simplicity of design, the low maintenance cost, the economy in space, &c. The illustrations show installations of these machines, their parts, and sectional views.

Oiling Devices.—Bowen Mfg. Company, Auburn, N. Y. Catalogue No. 5. Size 7¾ x 10¼ in.; pages 24. This illustrates and describes the company's style A, B, D, G, N. H and K oil cups, Empress plain and ratchet compression brass grease cups and plain compression steel grease cups, springs, miscellaneous oil hole covers, and stampings. Tables of prices are included.

Engines and Boilers.—Edwin H. Ludeman & Co., 42 Broadway, New York. Hanger. Illustrates examples of the products for which this firm is the New York sales office, including Houston, Stanwood & Gamble horizontal slide valve engines (15 to 1100 hp.), return tubular and locomotive boilers and combined engine and boiler outfits; Crescent safety vertical engines (side and center crank types); Wetherill heavy duty Corliss engines, and Fitchburg heavy duty four-valve engines.

Lubricators.—Michigan Lubricator Company, 661 Beaubien street, Detroit, Mich. Catalogue No. 10. Size 5½ x 7½ in.; pages 108. Covers the company's complete line, including lubricators, oilers, grease cups, oil pumps, water gauges, gauge cocks, throttle valves, oil gauges, oiling devices, flue cleaners, &c.

Automatic Drain Valves.—Michigan Lubricator Company, 661 Beaubien street, Detroit, Mich. Circular. Illustrates and describes the Michigan automatic drain valve for locomotive lubricators, a device recently patented, the purpose of which is to prevent the waste of oil during the draining of water from locomotive lubricators. It automatically closes when the water has been drained and leaves the oil in the lubricator. It is simple in construction and operation, consisting merely of a ball float, working freely in a cage, which rises and falls with the water level in the reservoir, always remaining below the level of the oil. When all of the water has been drained out the float seats, retaining the oil above it. The Michigan Bull's-eye locomotive lubricator is equipped with this automatic drain valve.

Radial Reamers.—Hanna Engineering Works, 820 Elston avenue, Chicago, Ill. Circular. Refers to the Hanna radial 6-ft. portable reamer for bridge, ship, car and other structural shops.

Pneumatic Screen Shakers.—Hanna Engineering Works, 820 Elston avenue, Chicago, Ill. Catalogue No. 1 and circular. The latter illustrates an electric shaker for screening foundry sand and the catalogue relates to Hanna pneumatic screen shakers, which are made in small tripod, large tripod, stationary post and swivel post types. Each of these are shown and described, and a price-list and some testimonial letters are appended.

Plate Prices for Sixteen Years.

The accompanying table, which has been averaged monthly from weekly quotations in the Pittsburgh market reports of *The Iron Age*, gives the price of ¼-in. steel plates in cents per pound, f.o.b. Pittsburgh, from 1892 to 1907, inclusive, which is a period of 16 years:

	Jan. Cents.	Feb. Cents.	March. Cents.	April. Cents.	May. Cents.	June. Cents.	July. Cents.	Aug. Cents.	Sept. Cents.	Oct. Cents.	Nov. Cents.	Dec. Cents.	Aver. Cents.
1892	1.91	1.98	1.90	1.90	1.86	1.75	1.75	1.83	1.83	1.75	1.75	1.71	1.83⅛
1893	1.70	1.70	1.66	1.64	1.60	1.51	1.50	1.54	1.60	1.52	1.38	1.35	1.56
1894	1.30	1.25	1.15	1.10	1.18	1.25	1.25	1.20	1.19	1.18	1.19	1.15	1.20
1895	1.13	1.13	1.10	1.14	1.16	1.34	1.52	1.80	1.88	1.74	1.63	1.51	1.42
1896	1.36	1.35	1.35	1.39	1.29	1.27	1.25	1.17	1.15	1.14	1.10	1.12	1.24⅛
1897	1.10	1.10	1.10	1.08	1.05	1.05	1.01	1.00	1.00	1.06	1.05	1.00	1.05
1898	1.00	1.00	1.00	1.02	1.10	1.10	1.08	1.11	1.15	1.12	1.11	1.17	1.08
1899	1.29	1.45	1.73	2.05	2.12	2.32	2.45	2.55	2.85	2.79	2.52	2.30	2.20
1900	2.25	2.21	2.04	1.87	1.69	1.39	1.19	1.08	1.12	1.10	1.31	1.39	1.55
1901	1.40	1.40	1.47	1.50	1.58	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.55
1902	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60
1903	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60
1904	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60
1905	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60
1906	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.70	1.70	1.61⅜
1907	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70

Many More Furnaces Out.

Active Capacity 232,652 Tons a Week.

Pig Iron Production in 1907 Estimated at 25,737,000 Tons.

December pig iron production showed a great decline from that of November—roundly 600,000 tons, as against a falling off of about 500,000 tons in November from the record output of 2,336,972 tons in October. Relatively a greater cut is shown when a comparison is made of active capacity December 1 and January 1. On the latter date the weekly capacity of coke and anthracite furnaces in blast was but 232,652 tons, or about 45 per cent. of the average for the four months preceding November, and 115,000 tons less than on December 1. But once in the past seven years, according to the records of *The Iron Age*, has so low a point been touched. That was on January 1, 1904, at the beginning of the month in which bottom was reached in the remarkable curtailment movement of 1903-4, the active weekly capacity on that date being 185,636 tons. It is significant that we have now approached the low point of the last spectacular blowing out movement, and more so when it is considered that consumption in the first 10 months of 1903 was fully one-third less than in the like period of 1907.

Pig Iron Production in 1907.

An estimate is now possible of the pig iron production in 1907, based on our monthly figures for coke and anthracite pig iron output in the past six months, estimating charcoal iron for the second half of the year at 170,000 tons, as against 205,796 tons in the first half:

First half of 1907	13,478,044
Second half of 1907	12,258,933
Total	25,736,977

The rate of pig iron production in the first four months of the second half of last year fully warranted the expectation that the output for the first half would be exceeded and that the year's total would reach 27,000,000 tons. It appears, therefore, that the panic and the resultant contraction have already shorn the iron industry of over 1,250,000 tons of pig iron product.

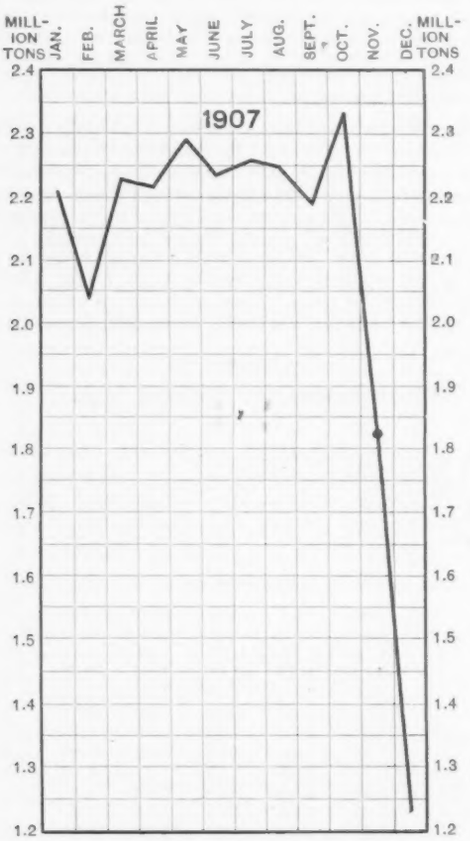


Diagram of Coke and Anthracite Pig Iron Production by Months in 1907.

The Slump Shown in Diagram.

Herewith is plotted the line of coke and anthracite pig iron production in 1907 by months. Had the October output carried the curve to the top of the diagram, or 2,400,000 tons, and had the plunging lines for November and December gone to 1,200,000 tons in the latter month, the falling off in two months would have been just 50 per cent.

It will be interesting to note on what angle the line moves from the December space to the point representing January production. Steel works furnaces are now producing at a greater rate than at the close of December, while the merchant furnace output promises to decrease further, in view of plans for blowing out more furnaces in January. A considerable number of idle stacks are banked, so that their starting up will not be difficult, should the iron be needed.

December Production.

The table below gives the production of coke and anthracite furnaces in December and the four months preceding:

Monthly Pig Iron Production—Gross Tons.

	August. (31 days)	Sept. (30 days)	Oct. (31 days)	Nov. (30 days)	Dec. (31 days)
New York	150,385	150,264	152,710	111,407	86,993
New Jersey	35,026	32,877	30,574	24,079	22,555
Lehigh Valley	60,160	68,559	71,936	61,969	54,881
Schuylkill Val.	59,807	53,978	48,543	43,876	37,747
Lower Susquehanna and Lebanon Val.	64,456	59,580	67,286	47,683	31,090
Pittsburgh Dis.	525,341	509,497	533,078	409,024	258,412
Shenango Val.	152,917	144,978	158,315	124,159	76,086
West. Penn	129,922	133,906	143,078	130,192	105,671
Md., Va., and Kentucky	84,462	81,398	86,829	79,293	61,433
Wheeling Dis.	121,078	117,445	134,445	76,014	12,051
Mahoning Val.	177,438	162,644	180,968	129,334	68,776
Central and North. Ohio	176,700	164,314	185,422	149,362	84,087
Hocking Valley and Hanging Rock	35,590	32,138	33,843	28,017	15,658
Mich.,Minn.,Mo., Wis., Colo.	77,961	79,112	81,155	59,697	48,950
Chicago Dis.	215,641	212,413	244,645	200,309	148,691
Alabama	144,374	142,766	146,354	118,190	94,810
Tennessee, Georgia and Texas	39,152	37,618	37,791	35,520	26,388
Totals	2,250,410	2,183,487	2,336,972	1,828,125	1,234,279

Production of Steel Companies.

The steel companies have led in the curtailment movement thus far—that is, they have put out a greater percentage of their capacity than has been the case with the merchant furnaces. Returns from all the plants of the United States Steel Corporation, the Cambria, Pennsylvania, Maryland, Lackawanna, Wheeling, Republic, Youngstown Sheet & Tube Company, Jones & Laughlin, La Belle, Bethlehem, Calumet, Inland and Colorado companies show the following totals of product month by month. We give separately a statement of the output of spiegeleisen and ferromanganese, which is included for each month in the total production:

Production of Steel Companies.—Gross Tons.

	Pig.—Total production.—			Spiegeleisen and ferromanganese.	
	1905.	1906.	1907.	1906.	1907.
January	1,129,042	1,358,015	1,406,397	26,305	21,477
February	1,027,937	1,226,760	1,317,923	26,988	19,444
March	1,232,255	1,400,395	1,424,827	23,595	31,091
April	1,222,710	1,333,591	1,446,788	28,054	26,527
May	1,287,438	1,372,423	1,470,080	29,447	28,822
June	1,149,404	1,293,437	1,457,230	22,737	30,942
July	1,114,409	1,323,391	1,452,557	20,153	25,343
August	1,186,050	1,237,485	1,445,685	18,327	23,696
September	1,262,033	1,264,380	1,417,153	24,078	30,270
October	1,370,960	1,452,200	1,514,521	23,517	35,105
November	1,334,644	1,411,350	1,084,114	29,119	21,861
December	1,356,962	1,445,528	659,459	21,707	19,480

Capacity Active January 1 and December 1.

The following table gives the weekly capacity of coke and anthracite furnaces in blast January 1 and December 1:

Coke and Anthracite Furnaces in Blast.

Location of furnaces.	Total number of stacks.	January 1. Number in blast.	January 1. Capacity per week.	December 1. Number in blast.	December 1. Capacity per week.
New York:					
Buffalo	14	6	12,048	8	17,845
Other New York	10	3	3,346	4	5,105
New Jersey	8	5	4,977	5	4,846
Spiegel	2	0	0	0	0
Pennsylvania:					
Lehigh Valley	25	13	10,382	16	12,742
Spiegel	3	2	658	2	608
Schuylkill Valley	14	4	5,182	8	6,845
Spiegel	1	1	921	1	730
Low. Susquehanna	8	2	2,975	5	6,709
Spiegel	1	0	0	0	0
Lebanon Valley	10	3	2,415	4	3,382
Pittsburgh Dist	45	26	70,127	26	72,843
Spiegel	3	1	596	2	1,452
Shenango Valley	20	5	9,240	12	21,861
West. Penn	27	13	19,516	20	30,242
Maryland	4	1	2,018	3	6,155
Wheeling Dist	14	0	0	4	6,935
Ohio:					
Mahoning Valley	18	5	8,748	10	20,267
Central and North. and Michigan	22	6	10,115	13	30,270
Hocking Valley and Hanging Rock	12	5	2,351	9	4,891
Illinois and Indiana	23	11	27,160	16	40,625
Spiegel	2	0	0	1	910
Minnesota	1	1	845	1	730
Wisconsin	6	1	1,650	3	3,197
Missouri	1	0	0	1	524
Colorado	6	3	6,817	3	5,424
The South:					
Virginia	23	5	3,741	12	7,710
Kentucky	7	2	1,582	3	2,254
Alabama	46	16	20,454	20	24,248
Tennessee	18	9	4,788	14	8,022
Georgia and Texas	3	0	0	0	0
Totals	397	149	232,652	226	347,372

A Five Year Record.

The active weekly capacity in coke and anthracite iron has shown the following fluctuations since January 1, 1903. The comparison of the curtailment of 1903-4 with that of 1907-8 is interesting:

	Capacity per week.		Capacity per week.
January 1, 1908	232,652	June 1	443,092
December 1, 1907	347,372	May 1	452,031
November 1	491,436	April 1	439,564
October 1	511,397	March 1	403,157
September 1	507,768	February 1	405,792
August 1	513,471	January 1, 1905	377,879
July 1	528,170	December 1, 1904	357,846
June 1	523,220	November 1	334,249
May 1	524,538	October 1	319,249
April 1	496,456	September 1	291,573
March 1	511,035	August 1	246,092
February 1	492,359	July 1	272,301
January 1, 1907	507,397	June 1	336,107
December 1, 1906	513,860	May 1	368,244
November 1	500,580	April 1	337,257
October 1	469,665	March 1	308,751
September 1	441,426	February 1	273,692
August 1	449,908	January 1, 1904	185,636
July 1	460,570	December 1, 1903	244,156
June 1	472,622	November 1	273,715
May 1	484,031	October 1	353,142
April 1	484,240	September 1	360,197
March 1	479,737	August 1	353,681
February 1	482,156	July 1	384,825
January 1, 1906	463,673	June 1	388,178
December 1, 1905	475,814	May 1	373,496
November 1	460,449	April 1	386,215
October 1	445,468	March 1	347,424
September 1	412,563	February 1	335,239
August 1	410,088	January 1, 1903	346,073
July 1	408,617		

Furnaces Blown Out in December

Among furnaces which went out of blast between December 1 and January 2, were Missouri at St. Louis; the Detroit Iron & Steel Company's stack; two Lackawanna and Burden in New York; one Brooke, Topton, Temple and one Warwick in the Schuylkill Valley; two Bethlehem and one Hokendauqua in the Lehigh Valley; Edith, Neville Island, one Edgar Thomson and Clinton at Pittsburgh; Claire, Ella, Fannie, two New Castle, one South Sharon and one Shenango in the Shenango Valley; three Cambria, Nittany, Perry, Rebecca and Scottdale in western Pennsylvania; Lochiel and two Steelton in the Susquehanna Valley; Sheridan in the Lebanon Valley; Gem, Big Stone Gap, Low Moor, Covington, Princess, Victoria, Bristol and Radford Crane in Virginia; two Maryland Steel in Maryland; one Ashland in Kentucky; one La Belle and three Wheeling Steel & Iron in the Wheeling District; one Central at Cleveland, two Columbus, Dover and two Lorain in northern and central Ohio; Bird, Hamilton, Marting and one Wellston in the Hanging Rock District; one Calumet, four Illinois Steel and one Iroquois in Illinois; Spring Valley and Thomas in Wisconsin; Anna, Cherry Valley, Brier Hill and two Haselton in the Mahoning Valley; Central, Sheffield and two Southern Steel Company in Alabama; one Allen's Creek, Chattanooga, Citico, one Dayton and Goodrich in Tennessee.

The resumptions were few: One New Castle, one Duquesne and two Edgar Thomson, while several furnaces (as in the case of the American Steel & Wire Company) that had been banked for a good part of December, started up with the beginning of the new year.

PERSONAL.

T. Vaughan Stapler, for several years advertising manager for the American Sheet & Tin Plate Company, Pittsburgh, has resigned his position, and is now associated with the Hill & Stocking Company, Commonwealth Building, Pittsburgh, making a specialty of advertising literature, such as catalogues, booklets, mail folders, &c., and also in the preparation of advertising campaigns. He has been very successful in his particular line of work, and has already made some valuable connections among leading advertisers.

On January 2, Capt. Irving M. Bean of Milwaukee retired as president and head of the Northwestern Iron Company, after managing its business for 40 years. During the day a committee from the company's plant at Mayville, Wis., representing all the employees, presented the retiring president with a solid silver loving cup.

J. C. Miller, formerly sales agent of the Columbus Iron & Steel Company, Columbus, Ohio, has been elected secretary of that company.

Charles H. Norton of the Norton Grinding Company, Worcester, Mass., sails from New York on the Celtic, January 9, for a three months' business trip in Europe.

Lucien C. Brown, purchasing agent for the Ralston Steel Car Company, Columbus, Ohio, has been promoted to be manager of the New York office, which has been opened in the United States Express Building, 2 Rector street. Forest E. Green, Mr. Brown's assistant at Columbus, is promoted to the post of purchasing agent.

Charles M. Schwab and Archibald Johnston have gone to Cuba for the purpose of making an inspection of the iron ore mines of the Bethlehem Steel Corporation.

Reports that the Union Switch & Signal Company, Swissvale, Pittsburgh, had received a contract from the Pennsylvania Railroad for switch and signal equipment amounting to $25,000,000 are absurd. The company got a contract from the Pennsylvania Railroad about a year ago for considerable equipment, but the order has long since been filled. Its plant was shut down for a week, but started up again January 2, this being the original intention. The company has only a fair amount of work on hand.

The Commonwealth Trust Company, Pittsburgh, Pa., has been appointed receiver for the General Casting Company, Verona, Pa., near Pittsburgh. The bill on which the appointment was made was filed by Daniel Eagan, who says the company owes him $100,000, and that he has stock worth $5000. It is claimed that the debts of the company aggregate $216,000. His prayer for a receiver was joined in by the company.

The Automatic Vending Machine Company has been incorporated at Indianapolis, Ind., with $15,000 capital stock, to manufacture vending machines. The directors are R. E. Ressler, M. J. Ressler and G. A. McColley.

NEWS OF THE WORKS.

Iron and Steel.

The entire plant of the Youngstown Iron & Steel Roofing Company, at Youngstown, Ohio, manufacturer of black and galvanized sheets in iron and steel, metal lathing and flooring, was in full operation last week. For some time four hot mills have been operated, but the plant is on full now in all departments.

The Standard Iron Company blew out its blast furnace at Goodrich, Tenn., December 26. It will be out for something less than three months for relining and other repairs. The furnace had been run continuously since the latter part of March, 1904, and in the interval had not been banked in all more than two weeks. In addition to relining the furnace the company is putting in the C. W. Hunt system and will also raise the mantle and somewhat increase the capacity of the furnace.

The Illinois Steel Company blew out furnace No. 4 at its old South Works December 4, and furnace No. 7 at the new South works December 11. Joliet Furnace No. 1 was blown out December 14, and Union Furnace No. 3, December 19.

The St. Louis Blast Furnace Company, St. Louis, Mo., blew out its furnace, December 30, for relining.

No. 1 furnace of the Lackawanna Steel Company, Buffalo, N. Y., was banked December 27, and No. 2 furnace was blown out December 24.

The Bethlehem Steel Company blew out Furnace A at South Bethlehem, Pa., December 21, for repairs. Furnace D was blown out December 6.

Of the Pittsburgh District furnaces of the American steel & Wire Company, Edith and Neville Island are idle. The two Shoenberger stacks, which were banked for a considerable portion of December, were put in blast last week. In the Cleveland District the company now has two Central furnaces in blast, while one of this group and the Emma and Newburgh furnaces are out.

In the Pittsburgh District, 27 furnaces were in blast January 1 against 28 December 1. Clinton Furnace was blown out December 14. One Edgar Thomson spiegel furnace was blown out in December and two furnaces of the American Steel & Wire Company. One more Duquesne furnace and one more Edgar Thomson furnace were in blast January 1 than on December 1.

The Cambria Steel Company, Johnstown, Pa., had three out of eight furnaces in blast January 1, one having gone out December 9 and two December 23. Other western Pennsylvania furnaces which went out in December were Nittany at Bellefonte, Pa.; Perry at Erie, Pa., blown out December 16, and Scottdale at Scottdale, Pa., which had a break out December 17 and will be reconstructed.

The furnace of the Berkshire Iron Works, Sheridan, Pa., was blown out for repairs December 17.

Princess Furnace, at Glen Wilton, Va., was blown out December 9.

Victoria Furnace of the Goshen Iron Company, Goshen, Va., was blown out December 18.

The Wheeling Steel & Iron Company blew out its Belmont Furnace for relining December 8, and its Martins Ferry Furnace for the same purpose December 22. The former stack will be remodeled. Its Top Mill furnace was banked December 2.

Hamilton Furnace of the Hanging Rock Iron Company, Hanging Rock, Ohio, was banked December 24.

One stack of the Wellston Steel & Iron Company, Wellston, Ohio, was blown out December 7.

All the furnaces of the Republic Iron & Steel Company in the Shenango and Mahoning valleys, four in the former and two in the latter, were out of blast January 1.

No. 4 furnace of the Shenango Furnace Company, at Sharpsville, Pa., was blown out January 3.

Ella Furnace of Pickands, Mather & Co., at Sharpsville, Pa., was blown out December 31.

Brier Hill Furnace of the Brier Hill Coal & Iron Company, Youngstown, Ohio, was blown out January 1.

Mary Furnace of the Ohio Iron & Steel Company, Lowellville, Ohio, will probably be blown out on January 10.

The blast furnace of the Sharpsville Furnace Company, at Sharpsville, Pa., is expected to go out of blast about January 15.

Claire Furnace of the Claire Furnace Company, at Sharpsville, Pa., was blown out December 27.

Of the four Monongahela blast furnaces of the National Tube Company at McKeesport, Pa., stacks A and C were out of blast all of December, while furnaces B and D operated 13 days each in that month. The Lorain, Ohio, furnaces were all out of blast January 1.

The Washington Steel & Bolt Company, Edmonds, Wash., contemplates the installation of a rolling mill some time in the future to run in conjunction with its present works.

The entire plant of the Youngstown Sheet & Tube Company, Youngstown, Ohio, consisting of Bessemer steel plant, puddling department, pipe and sheet mills, is running practically full this week, after being closed down in nearly all departments for several weeks.

The 8, 9 and 10 in. finishing mills of the Sharon Steel Hoop Company, Sharon, Pa., have been started up after being idle nearly a month. The open hearth steel plant and blooming mill are still closed, but may possibly be started this month.

Blast furnaces Nos. 2 and 4 at the Ohio Works of the Carnegie Steel Company, Youngstown, Ohio, have been blown in again, but most of the metal is being shipped to New Castle, Pa., the Bessemer plant at Youngstown being closed to allow a new blooming mill to be installed.

The Worth Brothers Company, Coatesville, Pa., contemplates the installation of about 12 more forge fires in connection with its tube works.

The sheet mills of the Alan Wood Iron & Steel Company, Conshohocken, Pa., were started at half capacity January 6, after several weeks' idleness.

General Machinery.

The Nodamp Machinery Company, Minneapolis, Minn., manufacturer of concrete machinery, may enlarge its plant in the spring and install additional machinery. At the present time the company contracts for its castings and does the assembling at its own plant. F. W. Tidhall is president; D. J. Ames, vice-president, and J. T. Thurman, secretary and treasurer.

Thomas Carlin's Sons Company, 1600 River avenue, Allegheny, Pa., manufacturer of contractors' equipment, including hoisting engines, steam shovels, &c., also grinding pans and shearing machinery, has received an order through Takata & Co., the New York export house, for one of its concrete mixers for the Imperial Railway of Japan. Other export business includes shipment of a hoisting engine to Spain and a gold dredging engine for Central America. The company has recently supplied two large hoisting engines for Mobile, Ala., and has contracts for five grinding pans and 15 shears, aggregating a considerable tonnage, for shipment to various other points.

H. L. Dixon, Pittsburgh, expects to occupy his new plant at Rosslyn Station, near Carnegie, Pittsburgh, about February 1, at which time he will have removed the machinery from his present plant at Carnegie. The buildings to accommodate the foundry, machine and forge departments are about completed. Electric drive by line shaft and individual motors will be used throughout the works wherever practicable. Mr. Dixon makes a specialty of glass works construction and machinery and does job casting work. About four months ago he sold the ground and buildings now occupied at Carnegie to the Superior Steel Company, which will use a portion of the ground for an open hearth plant.

The Frick & Lindsay Company, mine and mill supplies, Pittsburgh, Pa., has leased space in the Pittsburgh Terminal Warehouses on the South Side, and will shortly make all shipments from the new location, as well as receiving all inbound freight there. Messenger, Pringle & Co., also of Pittsburgh, and dealers in oil well supplies and machinery, have leased space in the same building, and will use it for a similar purpose. Both concerns will, however, maintain their downtown sales offices and stores.

Power Plant Equipment.

The N. C. Davison Company, Empire Building, Pittsburgh, Pa., has recently taken orders for Riverside gas engines made by the Riverside Engine Company, Oil City, Pa., as follows: Pittsburgh Plaster Company, 40-hp.; Fort Pitt Bedding Company, Allegheny, 80-hp.; Burgettstown Milling Company, 80-hp. Bessemer gas engines made by the Bessemer Gas Engine Company, Grove City, Pa.: Herberts Brothers, Brownsville, Pa., 25-hp.; Haller Bread Company, 15-hp.; Bergman Mfg. Company, Pittsburgh, 25-hp.; United States Radiator Company, West Newton, 150-hp.; West Newton Water Works, 20-hp. Bessemer gas engine for furnishing pumping power: United States Coal Company, Gary, W. Va., 5 x 6 in. track pumps, and from the Hitchman Coal Company, Glendale, W. Va., a 6½ x 7 in. triplex pump.

The Mosher Water Tube Boiler Company, New York, has increased its capital stock from $200,000 to $300,000.

The United States Boiler Appliance Company of Pittsburgh has been granted a charter with a capital of $25,000 and will erect a plant in the Pittsburgh District to manufacture boilers and engines. The incorporators are A. K. Young and H. D. Gamble of Pittsburgh and Harry W. Davis of Wilmington, Del.

The Pittsburgh office of A. D. Granger & Co. has secured an order for two 400-hp. automatic compound Skinner-Corliss engines for the Pittsburgh Seamless Tube Company at Monessen, Pa.

The Mountain State Boiler Works, Parkersburg, W. Va., recently destroyed by fire, has erected a temporary building to carry on operations until spring, when a concrete building will be erected. A stock company will be formed with a capital of $25,000, and the equipment of the plant will be increased at that time.

The West Newton Light, Heat & Power Company, West Newton, Pa., has been incorporated by Manning Stires, Edward McSweeney and L. V. Sutton, all of West Newton, to furnish

electric light, heat and power to the residents and industries of that borough and vicinity.

It is reported that the northern division of the Baltimore & Ohio Railroad, from Butler to Kane, Pa., will be converted into an electric trolley line this year. The power station will be located at the Butler end of the line, with substations distributed at convenient points between that city and Kane.

Foundries.

The Damascus Bronze Company, South avenue, Allegheny, Pa., has recently purchased more ground adjoining its present plant, on which it will erect in the spring a 75 x 100 ft. brick and steel building as an extension to its foundry. This will give it an increased production in its line of brass and bronze castings.

The King Stove & Range Company, Sheffield, Ala., is arranging to rebuild the portion of its plant recently destroyed by fire. A new foundry room, 300 ft. long, with concrete walls, will be erected and equipped with complete overhead trolley system and foundry equipment.

The Arcade Malleable Iron Company, Worcester, Mass., manufacturer of malleable iron castings, has vacated its works at Washington square and occupied the remodelled plant at Albany and Muskeego streets. The company is now equipped to manufacture on a larger scale than ever before, with a force of 100 men.

The Sharon Foundry Company, Sharon, Pa., has started up its foundry at Wheatland, Pa., practically full time, after running half time or less for three or four weeks.

An application for a charter will be made on January 21 by Richard W. Jones, Hubert P. Wiggins and Henry A. Jones for a corporation to be called the Titanic Steel Casting Company, Pittsburgh, Pa.

The business of the Norton Foundry Company, Norton, Va., has been taken over by a new company which will use the plant for the manufacture of mine cars and light mining and sawmill machinery and for general repair work. Rudolph Schwank is president and manager; C. J. Schwenk, vice-president, and J. R. McNutt, secretary and treasurer.

Fires.

The plant of the W. Cummings Leather Company, Woburn, Mass., was destroyed by fire January 5, the loss being about $50,000.

The coal tipple and power plant of the Belmont Coal Company at Crown Hill, W. Va., near Montgomery, was burned January 1. The loss is placed at $25,000.

The electric light plant at the Edgar Thomson steel works of the Carnegie Steel Company, Braddock, Pa., was badly damaged by fire January 2. The loss will amount to about $10,000. The building was 50 x 100 ft., and will be repaired at once.

Hardware.

The John Knape Machine Company, Grand Rapids, Mich., manufacturer of special machinery and metal press work, has increased its capital stock from $15,000 to $20,000. Owing to the rapidly increasing business the company found it necessary to enlarge its factory and plating plant, and is now provided with facilities to make and finish its newly patented Monarch show case bracket and standard. The officers of the company are John Knape, president; E. J. Vogt, treasurer; J. Pearn, secretary.

The Schwene Mfg. Company, Ogden, Iowa, and the Perry Mfg. Company, Perry, Iowa, have been consolidated under the latter style. The new company at Perry, Iowa, will manufacture a line of steel hardware and specialties, including a pressed steel toy wagon; also dies and special machinery. In order to take care of the business and make prompt shipments plans have been completed for the construction of a new factory, 50 by 100, two stories high, also drying sheds and storage warehouse for steel, the buildings to be erected as soon as the weather permits.

The Ward Fence Company has moved its office from Marion, Ind., to Decatur, Ind., where it is building a large factory for the manufacture of poultry fencing, ornamental wire and steel picket lawn fence, &c.

Dufur & Co., Baltimore, Md., manufacturers of wire goods, have been enlarging their weaving department and state that they are now in a better position than ever in the past to furnish the trade promptly all size meshes and grades of brass, copper, tinned and steel wire cloth.

Miscellaneous.

The Woods-Evertz Stove Company, Springfield, Mo., has increased its capital stock from $100,000 to $130,000, fully paid up. A new factory building, 86 x 160 ft., and a foundry 60 x 150 ft., both modern fireproof buildings, construction of concrete blocks, have just been completed.

The Edison Phonograph Works, Orange, N. J., which has been engaged upon building extensions to its plant for the last few years, has about completed the last one of a group of five-story concrete buildings and has arranged for the equipment. An addition to the power plant has been completed, consisting of a boiler house, 35 x 67 ft., equipped with three Morrin Climax boilers, two of 750 hp. and one of 500 hp. capacity. The company has also added a 1500-hp. Allis vertical compound engine, direct connected to General Electric generator of 100-kw. capacity.

The Simplex Faucet Company, Hyde Park, Mass., has taken commodious manufacturing quarters in that place, and has begun the manufacture of Simplex faucets and Whitney faucets and ball cocks on a larger scale. The works are equipped for the production of its specialties on a commercial basis, in a building admirably fitted for the purpose. Alfred L. Lovejoy is the president and Charles B. Whitney treasurer.

James E. McWilliam, Hubbardstown, Mass., manufacturer of fire extinguishers and textile machine goods, whose plant was wrecked recently by the explosion of a boiler, announces that he will rebuild on the premises.

The Pease Machine Company, Pittsburgh, Pa., is installing the last of the motors, compressors and dynamos to operate the window glass making machines that are being installed in the old factory of the Johnston Glass Company at Hartford City, Ind. The first work will be largely experimentary, but Rodger S. Pease, the inventor of the machine that is to make the glass cylinders, will have supervision of the plant, and he is confident that a marketable product will be made from the start. Mr. Pease is the inventor of the mechanical blowers now in use in the plants of the American Window Glass Company. The machine blows the glass with compressed air. One of them will make as much glass as eight human blowers in the same time.

D. E. Berry & Co., Evansville, Ind., have been incorporated, with $10,000 capital stock, to manufacture and deal in electrical fixtures and supplies. The directors are D. E. Berry, H. McKay Berry and C. E. Jett.

The Metal Web & Spring Company has been incorporated at Indianapolis, Ind., with $15,000 capital stock, to manufacture metal webbing for upholstery. The directors are T. A. Cole, A. L. Henry and P. J. McDonald.

The Elkhart Dry Battery & Signal Company has been incorporated at Elkhart, Ind., with $25,000 capital stock, to manufacture dry batteries and electric signals. The directors are Wm. F. Seidel, Ernesto Sassenhoff, A. Elmer Manning and Chas. W. Stockdale.

The McDowell Mfg. Company has been incorporated at Auburn, Ind., with $20,000 capital stock, to manufacture motor vehicles. The directors are Willis McDowell and Alverow McDowell.

A decree in dissolution has been asked for in the Allegheny County courts by the Ferguson Tin Plate Company, operating a plant at Torrens street and Pennsylvania Railroad, Pittsburgh. The company has no liabilities, and the dissolution was agreed upon by the stockholders.

The Ohio Suits Against the Plumbing Supply Trade.

Without explanation, a wrong impression is given in the newspaper accounts of the decree of the Ohio Court in the suits brought in Franklin County by Attorney General Wade Ellis against concerns engaged in the plumbing supply business and members of the supply associations. The final action by the court is extremely moderate, and only has bearing on those resolutions adopted years ago by the supply associations, which were found to contravene the provisions of the Valentine law and which resolutions were rescinded months ago. The suit in the courts was carried through, and it is gratifying to the trade that the decree disposes of the matter with no further orders than were anticipated and complied with in the rescinding of the above mentioned resolutions.

Notwithstanding the impression that might be gathered from the newspaper presentation of the decree, it does not apply in any way to the supply associations or their members in Ohio, except in reference to the Detroit and other resolutions, which were rescinded. It does not require the Ohio members to withdraw and forego the benefits from membership in a co-operative association or apply to other rules of the association than those already mentioned. This is the situation that is left after the courts are through with the case. It is very encouraging after the irritation and anxiety to business men which it has naturally caused.

The attitude of the Ohio courts is shown to be much more reasonable than some who have been excessively nervous or unnecessarily impatient and vexed were prepared to believe. The whole course of the Ohio officials and the association leaders in this case has been to conserve business interests and to avoid any of the deplorable effects that were feared by business men in other lines who were watching with interest the final disposition of the case.

The Iron and Metal Trades

To drop within less than three months from a rate of production of Pig Iron of 27,000,000 tons per annum to a rate of 12,000,000 tons on the first of January is what the industry has accomplished. It shows how thoroughly manufacturers have been imbued with the conviction that it is wiser to meet changed conditions rather than continue in the hope of early betterment and pile Iron in the interval.

The returns to *The Iron Age* show that the production of Coke and Anthracite Pig Iron during December was 1,234,279 gross tons, as compared with 1,828,125 tons in November and 2,336,972 tons in October. While there were 226 furnaces in blast on December 1, with a capacity of 347,372 tons per week, there were only 149 furnaces in operation at the opening of the current year with a capacity of 232,652 tons, which is practically at the rate of 1,000,000 tons per month.

The output of the Steel companies, which was 1,514,521 tons in October, fell to 659,459 tons in December. The merchant furnaces which lagged at first in adjusting themselves are now following suit. Their production was 822,451 tons in October, fell only to 744,011 tons in November, but dropped to 574,820 tons in December. During that interval there was some accumulation of metal.

These figures are significant because they reflect closely the attitude and the action of the whole industry.

The majority of Pig Iron makers have withdrawn the lowest quotations which they have recently made, and the markets are firmer, although there are still some isolated sellers at former figures. Thus the leading Southern producers are asking $13.50 for No. 2 Foundry at Birmingham, and Eastern furnacemen are quoting $18.25 for No. 2 in the Philadelphia District, $17.75 to Pipe foundries on the Delaware River, $18.50 at Jersey City and $19.50 in New England. Basic is quoted $17.25, delivered.

There has been more business in the leading distributing centers, both in Foundry Irons and in Basic Pig, and inquiries are more numerous, but the quantities involved are not large.

Reports from the finishing mills are rather discouraging. There has been some accumulation of orders, justifying temporary resumption of operations, but no really important new business has been booked. The Rail trade is dull and the irregularity of prices in Light Rails seems to foreshadow lower prices. The Structural mills have a little business in sight, among which is a 4000 ton inquiry from the New York Central for terminal work, and the first installment of 1500 tons out of a total of 4000 tons for the New Haven viaduct at Providence.

The leading interests have announced a reduction in prices of Blue Annealed Sheets of $1 per net ton, of Black Sheets $2 per ton, except Nos 29 and 30, which are down $3 per ton, of Galvanized Sheets $4 per ton, except Nos. 29 and 30, which are lowered $6 per ton, of Painted Roofing Sheets 10 cents per square and of Galvanized Roofing Sheets of 15 cents a square. The larger reductions in Galvanized material are due to the decline in Spelter. The lower price of Pig Tin has led to a reduction of 20c. per box in the price of Tin Plate.

In the Connellsville Coke District product has been cut down in a manner unprecedented in the history of the industry. The wages have just been restored to the figures prevailing before the last advance in March of last year. Prices are weak and standard Connellsville Furnace Coke is being offered at $1.90, at oven.

Copper is steadier and first hands are asking 14c. for both Electrolytic and Lake, which second hands are shading slightly.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Jan. 8, 1908.	Jan. 1, 1908.	Dec. 11, 1907.	Jan. 9, 1907.
PIG IRON, Per Gross Ton:				
Foundry No. 2, Standard, Philadelphia	*$18.25*	$18.00	$18.50	$25.50
Foundry No. 2, Southern, Cincinnati	*16.25*	16.25	17.50	26.00
Foundry No. 2, Local, Chicago	*18.00*	18.50	19.00	25.50
Bessemer, Pittsburgh	*18.90*	19.40	19.90	23.35
Gray Forge, Pittsburgh	*17.40*	17.65	18.40	22.85
Lake Superior Charcoal, Chicago	*22.50*	23.50	25.00	27.00
BILLETS, &c., Per Gross Ton:				
Bessemer Billets, Pittsburgh	28.00	28.00	28.00	29.50
Forging Billets, Pittsburgh	30.00	30.00	30.00	36.50
Open Hearth Billets, Phila	30.00	30.00	30.00	33.00
Wire Rods, Pittsburgh	34.00	34.00	34.00	37.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
Steel Rails, Melting, Chicago	*12.00*	12.00	13.00	18.00
Steel Rails, Melting, Phila	11.50	11.50	11.50	18.75
Iron Rails, Chicago	*15.00*	15.00	15.50	28.00
Iron Rails, Philadelphia	*16.50*	17.50	17.50	27.50
Car Wheels, Chicago	*19.00*	20.00	22.00	25.00
Car Wheels, Philadeelphia	19.00	19.00	19.00	23.00
Heavy Steel Scrap, Pittsburgh	....	12.50	13.50	19.00
Heavy Steel Scrap, Chicago	*10.75*	10.75	11.50	17.00
Heavy Steel Scrap, Philadelphia	11.50	11.50	11.50	18.50
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia	1.75	1.75	1.75	1.88½
Common Iron Bars, Chicago	1.75	1.75	1.75	1.81½
Common Iron Bars, Pittsburgh	1.60	1.60	1.60	1.80
Steel Bars, Tidewater, New York	1.76	1.76	1.76	1.74½
Steel Bars, Pittsburgh	1.60	1.60	1.60	1.60
Tank Plates, Tidewater, New York	1.86	1.86	1.86	1.84½
Tank Plates, Pittsburgh	1.70	1.70	1.70	1.70
Beams, Tidewater, New York	1.86	1.86	1.86	1.84½
Beams, Pittsburgh	1.70	1.70	1.70	1.70
Angles, Tidewater, New York	1.86	1.86	1.86	1.84½
Angles, Pittsburgh	1.70	1.70	1.70	1.70
Skelp, Grooved Steel, Pittsburgh	1.70	1.70	1.70	1.65
Skelp, Sheared Steel, Pittsburgh	1.80	1.80	1.80	1.70
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	*2.40*	2.50	2.50	2.50
Wire Nails, Pittsburgh	2.05	2.05	2.05	2.00
Cut Nails, Pittsburgh	2.00	2.00	2.00	2.05
Barb Wire, Galv., Pittsburgh	2.50	2.50	2.50	2.45
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York	**13.87½**	13.62½	13.62½	24.25
Electrolytic Copper, New York	**13.75**	13.50	13.50	24.00
Spelter, New York	*4.40*	4.20	4.50	6.80
Spelter, St. Louis	*4.27½*	4.05	4.35	6.60
Lead, New York	*3.65*	3.75	4.00	6.30
Lead, St. Louis	*3.60*	3.60	3.75	6.10
Tin, New York	*26.75*	27.25	28.40	41.55
Antimony, Hallett, New York	8.75	8.50	8.75	25.00
Nickel, New York	45.00	45.00	45.00	45.00
Tin Plate, 100 lb., New York	*$3.89*	$4.09	$4.09	$4.09

Chicago.

FISHER BUILDING, January 8, 1908.—(*By Telegraph.*)

Responsive to the decline in raw materials, and directly following the recent rdeadjustment of Sheet Bars to $29, Pittsburgh, a reduction in the price of Sheets has been announced. The new prices now effective represent a decline ranging from $1 a ton on heavy and $2 a ton on light Black Sheets to $4 on Galvanized. The present schedule makes No. 10 Blue Annealed 1.98c.; No. 28 Box Annealed, 2.68c., and No. 28 Galvanized, 3.73c., Chicago. Cast Iron Pipe has also receded another $1 a ton, but even with this concession current quotations would likely be strongly shaded on round lots. Market activity is, however, principally confined to inquiries, which in the main are regarded as reflecting a desire to keep in touch with the market rather than a purpose to buy. A weaker tendency is observed in Light Rails, which notwithstanding a recent reduction of $2 a ton have been sold at a substantial concession from regular prices. There is but little demand for Light Rails from any source, and Track Supplies are equally quiet. Not much new business in Structural Shapes is coming out, the tonnage comprised in last week's contracts taken by the American Bridge Company amounting to but 2700. Pending accumulation of orders the Structural mills of the Illinois Steel Company are closed down. Other finishing departments, as well as independent mills in this district, are running intermittently so that the reported starting and stopping of this or that mill has no other significance than to indicate the volume of business offered. Efforts made by furnacemen to prevent further sagging of Pig Iron prices, through a better understanding

between the various interests, have not shown desired results. With several of the chief producers holding nominally at a basis of $13.50, Birmingham, for No. 2 Foundry, and $18.50, Chicago, for Northern No. 2, $13 is still being offered freely on the former and $18 on the latter. Attracted by the low prices ruling on Scrap material, dealers are beginning to show an inclination to buy when inducements are offered. There is practically no demand from consumers.

Pig Iron.—The fact that $13, Birmingham, for No. 2 Foundry is still being offered on deliveries extending through the first quarter, and that at least $13.25 has been done during the week on first half contracts, would indicate that the influences which were relied upon to hold the market above this point have thus far proved ineffective. Several of the largest Southern interests are quoting $13.50, Birmingham, as a minimum, but the uniformity necessary to maintain this level is lacking. Curtailment of production, drastic as it has been, scarcely equals the decrease in consumption, and there is nothing in the present situation that lends encouragement to the hope of immediate improvement in this respect. Of the numerous inquiries received but few result in orders. Among the sales reported for the week were several lots of from 50 to 500 tons, mostly for shipment within the first quarter. Inquiries for Basic aggregating 2000 tons from two large consumers, which were in the market some weeks ago, have reappeared and are now believed to represent actual requirements. A firmer attitude of the Northern furnaces, which a week ago seemed to warrant an inside quotation of $18.50, has not been rigidly maintained, due doubtless to the unresponsive action of Southern Iron. As an indication of melters' stocks, it may be noted that practically no demands are being made for reinstatement of shipping orders on suspended contracts. Such orders may be reasonably expected to precede a renewal of buying on a considerable scale. The following prices are for January, February and March delivery, f.o.b. Chicago:

Lake Superior Charcoal	$22.50 to $23.50
Northern Coke Foundry, No. 1	18.50 to 19.00
Northern Coke Foundry, No. 2	18.00 to 18.50
Northern Coke Foundry, No. 3	17.50 to 18.00
Northern Scotch, No. 1	19.00 to 19.50
Southern Coke, No. 1	17.85 to 18.35
Southern Coke, No. 2	17.35 to 17.85
Southern Coke, No. 3	16.85 to 17.35
Southern Coke, No. 4	16.35 to 16.85
Southern Coke, No. 1 Soft	17.85 to 18.35
Southern Coke, No. 2 Soft	17.35 to 17.85
Southern Gray Forge	15.35 to 15.85
Southern Mottled	14.85 to 15.35
Malleable Bessemer	18.50 to 19.00
Standard Bessemer	21.00
Jackson Co. and Kentucky Silvery, 6 %	28.40 to 28.90
Jackson Co. and Kentucky Silvery, 8 %	30.40 to 30.90
Jackson Co. and Kentucky Silvery, 10 %	32.40 to 32.90

(*By Mail.*)

Billets and Rods.—The demand for Forging Billets continues to be restricted to small lots for immediate requirements, there being no inquiries for, or sales of, any considerable tonnage reported. On current business $33 to $34 is still quoted. In the absence of transactions Wire Rods remain nominally at $34 to $35, Pittsburgh.

Rails and Track Supplies.—The entrance of the new year has thus far not been marked by any signs of activity on part of the railroads looking toward the placing of orders for 1908 Rail requirements. Neither has there been any better offering of specifications on tonnage carried over from last year, and unless a betterment in this respect develops in the near future the local mills will be compelled to suspend operation. The combined effect of cheap rerolling sections and scant demand is reflected in irregularity of quotations on Light Rails, which seem to foreshadow lower prices. We quote as follows: Angle Bars, accompanying Rail orders, 1907 delivery, 1.65c.; car lots, 1.75c. to 1.85c.; Spikes, 1.90c. to 2c., according to delivery; Track Bolts, 2.40c. to 2.50c., base, Square Nuts, and 2.55c. to 2.65c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb. sections, $30; 20-lb., $31; 16-lb., $32; 12-lb., $33, f.o.b. mill. Standard Sections, $28, f.o.b. mill, full freight to destination.

Structural Material.—Orders totaling 1000 tons, comprising material for two St. Louis buildings, were taken during the week by the American Bridge Company, together with 2700 tons of miscellaneous orders, including railroad bridges and small Structural jobs. Under the pressure of competition prices on fabricated work have been so far reduced as to leave but a very small margin of profit. The Structural mill of the Illinois Steel Company is at present idle, and new business is accumulating very slowly. Prices from store are quoted without change at 2.05c. to 2.10c., and mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.88c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.88c.; larger than 6 in. on one or both legs, 1.98c.; Beams, larger than 15 in., 1.98c.; Zees, 3 in. and over, 1.88c.; Tees, 3 in. and over, 1.93c., in addition to the usual extras.

Plates.—Business in Plates is exceedingly dull, and, judging from the lack of inquiries, there are no offerings of important tonnage in contemplation for the immediate future. Shipments of store stocks are made up principally of small orders representing immediate needs, the aggregate tonnage of which is light. No change in prices has yet been announced, either from mill or store stocks. We quote for shipment from mill as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.88c. to 2.08c.; 3-16 in., 1.98c. to 2.18c.; Nos. 7 and 8 gauge, 2.03c. to 2.23c.; No. 9, 2.13c. to 2.33c.; Flange quality, in widths up to 100 in., 1.98c. to 2.08c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.98c. to 2.18c.; Flange quality, 2.08c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2.20c. to 2.30c.; from 72 to 96 in. wide, 2.30c. to 2.40c.; 3-16 in. up to 60 in. wide, 2.30c. to 2.40c.; 72 in. wide, 2.50c. to 2.65c.; No. 8, up to 60 in. wide, 2.35c. to 2.45c.; Flange and Head quality, 0.25c. extra.

Sheets.—Following a persistent offering of concessions from established prices by some mills, a reduction of $1 a ton on Blue Annealed, $2 a ton on Box Annealed and $4 a ton on Galvanized Sheets has been made by the principal interest. The increased spread between Black and Galvanized is due to the continued cheapening of Spelter. In view of the recent reduction in store prices, quotations are not correspondingly lowered, although Blue Annealed and Galvanized are revised and are quoted $1 and $2 lower, respectively. Both mill and store business is at low ebb, and the effect of cheaper prices in stimulating buying will be watched with interest. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 to 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c. Black Sheets from store: Blue Annealed, No. 10, 2.20c.; No. 12, 2.25c.; No. 14, 2.30c.; No. 16, 2.40c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c. Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

Bars.—Nothing has developed to change the situation in Bars as respects either price or demand. Enough orders for Bar Iron are coming out to keep the local mills running about half time. Steel Bars are extremely quiet. There have, as yet, been few forwarding orders on suspended shipments, and new specifications against contracts are equally scarce. The amount of new orders offered is too small to cut any appreciable figure in the maintenance of rolling schedules. Quotations, Chicago, are as follows: Steel Bars, 1.78c., with half extras; Iron Bars, 1.75c.; Hoops, 2.18c., extras as per Hoop card; Bands, 1.78c., as per Bar card, half extras; Soft Steel Angles and Shapes, 1.88c., half extras. Store prices are as follows: Bar Iron, 2.10c. to 2.25c.; Steel Bars, 2c. to 2.10c.; Steel Bands, 2c., as per Bar card, half extras; Soft Steel Hoops, 2.35c. to 2.45c., full extras.

Merchant Pipe.—The demand is closely limited to filling in orders. Since it is now possible to get prompt shipment from the mills there is no necessity for jobbers to anticipate their wants far ahead; consequently they are buying only what is needed for nearby needs. Jobbers report a light demand for store shipments, orders being principally to cover uncompleted work. Prices are unchanged and the following mill discounts are quoted: Black Pipe, ¾ to 6 in., 71.2; 7 to 12 in., 68.2; Galvanized, ¾ to 6 in., 61.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 72 per cent. on Black Steel Pipe, ¾ to 6 in. About four points advance above these prices is asked for Iron Pipe.

Boiler Tubes.—Merchant Tubes are inactive, there being no demand beyond small orders for work in hand. Locomotive Tubes are also moving slowly. Store trade is quiet, but prices are fairly maintained at the usual discounts. Mill quotations for future delivery, on the base sizes, are as follows: 2⅜ to 5 in., in carload lots, Steel Tubes, 63.2; Iron, 50.2; Seamless, 49.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to 1¼ in.	35	35	35
1¾ to 2¼ in.	50	35	35
2½ in.	52½	35	35
2¾ to 5 in.	60	47½	47½
6 in. and larger	50	35	..

Merchant Steel.—Business is practically at a standstill. Neither the implement makers nor the jobbing trade are asking for shipments on held-up specifications, and new orders are few and insignificant in point of tonnage. What little business there is in Shafting is characterized by more or less irregularity as to quotations, and the market price is frequently shaded. Quotations are as follows: Planished or Smooth Finished Tire Steel, 1.98c.; Iron Finish up to 1½ x ½ in., 1.93c.; Iron Finish, 1½ x ½ in. and larger, 1.78c., base; Channels for solid Rubber Tires, ¾ to 1 in., 2.28c.,

and 1⅛ in. and larger, 2.18c.; Smooth Finished Machinery Steel, 2.18c.; Flat Sleigh Shoe, 1.93c.; Concave and Convex Sleigh Shoe, 2.08c.; Cutter Shoe, 2.46½c.; Toe Calk Steel, 2.33c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Shafting, 54 per cent. off in car lots; 48 per cent., less than car lots, base territory delivery.

Cast Iron Pipe.—A little encouragement is felt in the greater number of inquiries received within the past few days. Several of the larger Western municipalities have been asking prices, and it is believed that when buyers are convinced that the bottom has been reached business will improve in a very decided manner. At the present time orders are confined to miscellaneous lots of small tonnage. After a two weeks' shutdown most of the plants of the United States Cast Iron Pipe & Foundry Company has resumed, though all of them are running light. Prices are reduced $1 a ton and herewith revised. We quote, per net ton, Chicago, as follows: Water Pipe, 4-in., $32; 6 to 12 in., $31; 16-in. and up, $30, with $1 extra for Gas Pipe.

Old Material.—Offerings for the past week from railroads and other sources have been extremely small, and there has in consequence been not enough doing to influence the market one way or the other. As a result, values have remained practically stationary, except for a slight recession on a few grades. Having accumulated considerable stock on the downward trend of the market, the mills are not actively seeking additional tonnage even at the low prices now ruling. Nor is the demand any better for Melting grades. Easier money conditions now prevailing are expected to bring the dealers into the market a little more actively, though it is doubtful if there will be much buying of this character until the future course of trade is better established. The railroad offerings for this week comprise 3150 tons, of which the Santa Fé tendered 2800 tons and the Wisconsin Central 350 tons. We quote per gross ton, f.o.b. Chicago, as follows:

Old Iron Rails	$15.00 to $15.50
Old Steel Rails, rerolling	12.00 to 12.50
Old Steel Rails, less than 3 ft	12.00 to 12.50
Relaying Rails, standard sections, subject to inspection	22.00 to 25.00
Old Car Wheels	19.00 to 19.50
Heavy Melting Steel Scrap	10.75 to 11.25
Frogs, Switches and Guards, cut apart	11.00 to 11.50
Mixed Steel	8.50 to 9.00

The following quotations are per net ton:

Iron Fish Plates	$13.00 to $13.50
Iron Car Axles	15.50 to 16.00
Steel Car Axles	15.00 to 15.50
No. 1 Railroad Wrought	10.75 to 11.25
No. 2 Railroad Wrought	9.50 to 10.00
Railway Springs	10.00 to 10.50
Locomotive Tires, smooth	15.00 to 15.50
No. 1 Dealers' Forge	8.50 to 9.00
Mixed Busheling	7.50 to 8.00
Iron Axle Turnings	6.75 to 7.25
Soft Steel Axle Turnings	6.75 to 7.25
Machine Shop Turnings	6.75 to 7.25
Cast Borings	4.75 to 5.25
Mixed Borings, &c	4.75 to 5.25
No. 1 Mill	7.00 to 7.50
No. 2 Mill	6.00 to 6.50
No. 1 Boilers, cut to Sheets and Rings	7.00 to 7.50
No. 1 Cast Scrap	12.75 to 13.25
Stove Plate and Light Cast Scrap	11.50 to 12.00
Railroad Malleable	10.00 to 10.50
Agricultural Malleable	9.00 to 9.50
Pipes and Flues	8.00 to 8.50

Metals.—Due to a stronger tone in the Metal market, which is reflected in a slight advance on Copper, a little better volume of business has developed during the week. Actual orders placed were not, as a rule, for large amounts, but a good many inquiries have been received asking for prices on round lots for delivery through the first quarter. Other Metals are also somewhat firmer, although the demand cannot be said to have greatly improved. A little better feeling is observed in the Old Metal market, but has not developed far enough to influence prices, which remain unchanged. We quote as follows: Casting Copper, 14¼c.; Lake, 14¾c. to 15c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 29½c.; small lots, 30½c.; Lead, Desilverized, 4c. to 4.05c., for 50-ton lots; Corroding, 5.15c. to 5.25c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 4.60c.; Cookson's Antimony, 13c., and other grades, 11c. to 11½c.; Sheet Zinc is $7 list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13½c.; Heavy Copper, 13½c.; Copper Bottoms, 12c.; Copper Clips, 12c.; Red Brass, 13c.; Yellow Brass, 10½c.; Light Brass, 6½c.; Lead Pipe, 3¾c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

Although combined cars and mail cars of steel construction have been turned out of the Pennsylvania Railroad Company's shops at Altoona, it was not until December 28 that the first all-steel passenger car was finished and given a trial run to Huntingdon. The new coach is 74 ft. 10 in. long, weighs 116,100 lb., is lighted by electricity and seats 88 people.

Cleveland.

CLEVELAND, OHIO, January 7, 1908.

Iron Ore.—With a large proportion of the blast furnaces idle the Ore movement from the docks shows no improvement, there being practically no shipping orders. Nothing is being done as yet about Ore prices for the coming season, and it is not expected that a buying movement will start before spring. Lake shipbuilders have booked orders for 20 bulk freighters for delivery during 1908. This is a large falling off as compared with the past season, when 41 such freighters were built. The capacity of the new boats will not be quite so large as those built during 1907. During the past season a number of 600-ft. boats were placed in commission, but the largest vessels ordered for this year will be only 564 ft. long. The average carrying capacity of the new boats is 8710 tons. Most of the new boats are to be completed in time to go into commission at the opening of navigation in the spring. The leading shippers have not ordered any new tonnage, and nearly all the vessels to be built for this season will be operated by independent owners. To the list of 20 new freighters may be added about half a dozen boats that were ordered for 1907 delivery, but were not placed in commission. Nominal Ore prices remain as follows at Lake Erie docks, per gross ton: Old Range Bessemer, $5; Mesaba Bessemer, $4.75; Old Range Non-Bessemer, $4.25; Mesaba Non-Bessemer, $4; Siliceous Bessemer, $2.75; Siliceous Non-Bessemer, $2.35 to $2.60.

Pig Iron.—As the result of the inquiries for Northern Foundry Iron during the past two weeks, one local interest has sold between 2000 and 3000 tons of No. 2 Iron for first quarter and first half delivery. Some of the Iron was sold at $17.50, some at $17.25 and some at between $17 and $17.25, the above prices being at Toledo furnace. Inquiries continue to come in, and it is believed that there will be a fair volume of buying before the end of the month. The inquiries are all from outside foundries. Local foundries as a rule have enough Iron in their stock piles or undelivered on old contracts to last them about two months. For first quarter and first half delivery $17 seems to be the established price for No. 2 Foundry Iron at Valley furnace, although some interests are asking $17.50. One local furnace is quoting No. 2 Foundry at $17 for outside shipment during the first half and $17.50 delivered here. Nearly all the furnaces that have gone out of blast in this territory accumulated stock piles sufficient to fill all old contracts before going out of blast. These stock piles are not being depleted very rapidly by shipping orders. There is little inquiry for spot Iron, and that is mostly for car lots. With perhaps one exception it is not probable that any more furnaces will go out of blast in this territory. There are two inquiries in the local market for Basic Iron, one for 1000 to 2000 tons and the other for 500 tons. The most of the Iron is wanted for January delivery. There are some small inquiries for Southern Iron, but they seem to be mainly for the purpose of testing the market. Quotations for prompt shipment, first quarter and first half, f.o.b. Cleveland, are as follows:

Bessemer	$19.40
Northern Foundry, No. 1	$17.50 to 18.00
Northern Foundry, No. 2	17.00 to 17.50
Northern Foundry, No. 3	16.50 to 17.00
Southern Foundry, No. 2	17.35 to 17.85
Gray Forge	17.40

Coke.—The market is weak and inactive. The only transaction of any size during the week was the purchase by local interests of a supply of Furnace Coke for January. What is claimed to be standard Connellsville Furnace Coke is offered for delivery during the year at $1.85, at oven. Most producers are holding standard Connellsville Furnace Coke at $2 for spot delivery and $2 to $2.25 at oven, for first half. We quote Connellsville Foundry Coke at $2.75 for spot and first half. Inferior grades are selling at $2.50.

Finished Iron and Steel.—While the situation has not changed materially, there is a slight improvement in the demand, and inquiries are coming in a little better. The general feeling has improved considerably, and while it is too soon after the holidays to notice much of a renewal of activity, it is believed that orders will show considerable improvement before the end of the month. The possibility that prices will be lower is believed to be holding back some consumers who would place orders covering their early requirements without delay were they certain that present prices are to be maintained. Notification of the reduction of the price of Sheets has been received by local jobbers. A reduction of $2 per ton is made on Black Sheets and $4 per ton on Galvanized. The establishment of new prices is expected to have a good effect on the Sheet market by bringing out orders from consumers who have been waiting for such action. Local jobbers announce that they will probably not make a reduction in the warehouse price on Sheets because of the small margin of profit that they have been getting. During the week some small contracts for Steel Bars for the first half delivery have been closed. Mills are receiving some orders on contracts, but they are limited in tonnage. Local mills have taken some orders for Bar Iron

during the week. The two local Bar mills which shut down before the holidays will start up in a few days to fill their accumulated orders, probably next Monday. Prices on Bar Iron remain weak, and orders have been placed at 1.50c., Cleveland, and possibly lower. The mill of the Cleveland Steel Company, which shut down early in December for extensive repairs, will be started up about January 20. The Structural situation shows considerable improvement. Local shops received one inquiry for 800 tons and another for 400 tons during the week. Although there is no large work in sight, it is believed that there will be a fair demand for Structural Material for small construction work in this territory during the next few weeks. The demand for Light Rails for coal mines is keeping up fairly well in lots of one and two carloads, but mills rerolling Rails are getting about all the orders by shading prices from $3 to $4 per ton. There are inquiries for 150 tons of Standard Sections from traction lines. The price on Steel Bars is being firmly maintained. We quote Steel Bars at 1.70c., Cleveland, for carload lots, half extras; Beams and Channels, 1.80c., base, Cleveland, and Plates, ¼ in. and heavier, 1.80c., base, Cleveland. Revised mill prices on Sheets, carload lots, Cleveland, are as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Warehouse sales continue light. Jobbers' prices are unchanged. We quote Steel Bars, out of stock, at 1.90c. to 1.95c., and Iron Bars at 1.95c. to 2c. Beams and Channels out of stock are 2.10c. to 2.15c., base. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.20c.; Box Annealed, No. 28, 2.90c.; Galvanized, No. 28, 4.05c. Warehouse prices on Boiler Tubes, 2¾ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 67 per cent. discount.

Old Material.—No improvement is as yet noticeable, but dealers think that the demand will pick up somewhat in the next two or three weeks. Local mills are still shut down, and consumers are making no contracts for future needs. Some dealers, who believe that prices are at the bottom, are buying Scrap on speculation, and piling it in their yards, but are unable to pick up a great deal, as owners are holding it for higher prices. The railroad offerings this week include about 2000 tons to be sold by the Pennsylvania Lines, West. Prices, which are largely nominal, are unchanged. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

Old Steel Rails	$11.00 to $11.50
Old Iron Rails	16.00 to 17.00
Steel Car Axles	18.00 to 19.00
Old Car Wheels	16.00 to 17.00
Relaying Rails, 50 lb. and over	25.50 to 26.00
Relaying Rails, under 50 lb.	28.00 to 29.00
Heavy Melting Steel	11.00 to 11.50
Railroad Malleable	12.00 to 13.00
Agricultural Malleable	11.00 to 12.00
Light Bundled Sheet Scrap	9.00 to 10.00

The following quotations are per net ton, f.o.b. Cleveland:

Iron Car Axles	$17.00 to $18.00
Cast Borings	4.50 to 5.00
Iron and Steel Turnings and Drillings	6.50 to 7.00
Steel Axle Turnings	7.50 to 8.00
No. 1 Busheling	10.50 to 11.00
No. 1 Railroad Wrought	11.00 to 12.00
No. 1 Cast	12.00 to 13.00
Stove Plate	10.00 to 10.50
Bundled Tin Scrap	9.00

Cincinnati.

CINCINNATI, OHIO, January 8, 1908.—(*By Telegraph.*)

While there is yet apparent no evidence of a normal market nor a restoration of the influences which tend to induce normal conditions in Iron and Steel products, the feeling in the trade and among Pig Iron people is that the bottom has been reached in prices, particularly of Northern Irons, and that with the slow but steadily increasing melt and buyers and furnacemen practically at a standstill the situation is not unpromising. The banks in this section are less conservative than for the last quarter of 1907. The Scrap stock is being gradually reduced, the idle tool concerns have all resumed, and machinery dealers report some unexpected but welcome buying within the past four and five days. There is a better feeling, and it is not confined to any special class of Iron or Steel workers. The purification process temporarily embarrasses some large manufacturers, but it has also brought to a standstill all unnatural or unreasonable demands or effects of over inflation. The statement is made at National Metal Trades headquarters in this city to-day that it is the first time in the history of the organization that their officers can say, "We have not a single strike to deal with. The strike page is absolutely clean."

Pig Iron.—More inquiry is the ruling comment throughout the local field of sellers, and there are some feelers out for Iron for the last half. Withdrawing the $13 quotation on Southern No. 2 is having a tendency to stimulate some of the halting ones. There is still some $13 Iron to be had, however, and for second quarter requirements there is no doubt that that figure could be done. Some of the Southern furnaces are holding the price firm at $13.50. Basic seems to have the call this week, and there are known to be at least three inquiries for good sized tonnages out. The largest is for 5000 tons for first half delivery to an Ohio melter. Another is for 2000 tons for prompt shipment to a Chicago concern. The third comes from Cleveland, and is for 1000 to 2000 tons for first quarter delivery. An inquiry for 2000 tons of Southern No. 2 is accredited to an Ohio melter, who wants deliveries to commence early in the second half. The stove manufacturers, who had the distinction through the Detroit purchase of last week of setting the pace for the first quarter, are buying some Iron in lots of few carloads at a time. The unanimity of sellers of the Northern product on a basis of $17 for No. 2 bears out the assertion that there is an understanding among the producers of that section, and it would seem that this district is better off in a general trade way than the Southern District. Local foundries are at this time up to about a third of their normal business. Where for several weeks it had taken the accumulation of a week or so to warrant one day's heat, the larger foundries are now pouring three days a week and announce a little better feeling and vastly improved possibilities. Summing up the situation, the appreciable increase in inquiries, particularly of the two days of this week, leads sellers to believe that there are not apt to be any further declines for this quarter, considering the bareness of consumers' yards and the restricted production and small stocks at furnaces. For prompt shipment and for balance of first quarter of 1908 we quote, f.o.b. Cincinnati, as follows, the freight rates being from Birmingham $3.25, and from the Hanging Rock District $1.20:

Southern Coke, No. 1	$16.75 to $17.25
Southern Coke, No. 2	16.25 to 16.75
Southern Coke, No. 3	15.75 to 16.25
Southern Coke, No. 4	15.25 to 15.75
Southern Coke, No. 1 Soft	16.75 to 17.25
Southern Coke, No. 2 Soft	16.25 to 16.75
Southern Coke, Gray Forge	14.75 to 15.25
Southern Coke, Mottled	14.25 to 14.75
Ohio Silvery, 8 per cent. Silicon	23.20 to 23.70
Lake Superior Coke, No. 1	18.70 to 19.20
Lake Superior Coke, No. 2	18.20 to 18.70
Lake Superior Coke, No. 3	17.70 to 18.20
Car Wheel Irons.	
Standard Southern Wheel	$25.75 to $26.25
Lake Superior Car Wheel	26.50 to 27.00

(*By Mail.*)

Coke.—There is some little contracting, but in the main the situation is unchanged. Connellsville Foundry grades are held firm, at $2.75 to $3.25 at oven; Virginia Foundry, $2.50 to $2.75; Furnace brands, $2 to $2.25. There may be a little shading on good sized tonnages of Foundry Cokes of indifferent brands, but the best grades are held firm. There is a slight additional restriction of output noted since our last report.

Finished Iron and Steel.—Sales offices are in receipt (Monday) of the new scale of prices on Black and Galvanized Sheets. The new prices have not affected store quotations to any great extent, most dealers maintaining the scale that has been effective for several weeks. Many dealers refuse to believe that the reduction will improve the prevailing situation which is marked by most conservative buying and for pressing needs only. Dealers quote, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.75c., with half extras; small lots from store, 1.90c., base, one-half extras. Steel Bars, carload lots, 1.75c., base, half extras; small lots from store, 1.90c., base, half extras. Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c. Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c. Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2.10c. Blue Annealed Sheets (heavy), No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No. 14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.25c.; No. 12, carload lots, 2c.; small lots from store, 2.35c. Sheets (light), Black, No. 28, carload lots, 2.65c; Galvanized Sheets, No. 28, carload lots, 3.70c. Tin Plate, 100-lb. basis, 112 sheets, 14 x 20, 3.70c., Pittsburgh. Steel Tire, 4-in. or heavier, carload lots, 1.95c., base. Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.25c.

Old Material.—Scrap dealers see no improvement in the market, which is, if anything, duller and absolutely featureless. Something is expected in the way of business from tool manufacturers who have taken on a little activity since the holidays, but present developments do not warrant any material change in prices. As the best obtainable the following quotations are given, and are f.o.b. Cincinnati:

No. 1 Railroad Wrought, net ton	$10.00 to $11.00
Cast Borings, net ton	3.50 to 4.50
Steel Turnings, net ton	5.00 to 6.00
No. 1 Cast Scrap, net ton	12.00 to 13.00
Burnt Cast and Wrought, net ton	7.00 to 8.00
Old Iron Axles, net ton	14.50 to 15.50
Old Iron Rails, gross ton	14.50 to 15.50
Old Steel Rails, long, gross ton	10.00 to 11.00
Relaying Rails, 56 lb. and up, gross ton	22.00 to 23.00
Old Car Wheels, gross ton	16.00 to 17.00
Low Phosphorus Scrap, gross ton	13.50 to 14.50

Rogers, Brown & Co. have been reappointed by the Allegheny Ore & Iron Company representatives of that com-

pany's three furnaces at Iron Gate, Buena Vista and Shenandoah, Va. Some three months ago the Allegheny corporation determined to direct its own business from Clifton Forge headquarters, but now the old relations are resumed. The Buena Vista will blow out soon for repairs, leaving only the Iron Gate in blast.

Philadelphia.

PHILADELPHIA, PA., January 7, 1908.

An improvement is to be noted in the demand for some grades of Pig Iron as well as finished materials. Buyers in need of materials, who have been holding up orders for a time, have been coming into the market, but the tonnages taken, while larger than have been placed, as a rule, during the past month or two, have by no means been heavy. In most cases consumers are operating but a small part of their capacity, some not having over 40 or 50 per cent. of their plants in operation, while others which were closed down during the holidays have not yet resumed work. The feeling that a moderate improvement in the demand will continue to be shown is still strong, particularly when it is taken into consideration that the supply of crude and finished materials in consumers' yards is very small. Producers, however, are adjusting themselves to existing conditions as far as possible, and the output will undoubtedly be restricted so as to meet the demand, and will not be again increased until conditions generally fully warrant the same.

Pig Iron.—The leading feature in the Pig Iron market is the turn that prices have taken during the past few days. Producers will not continue to sell Iron at prices which, if continued, would mean a large loss; neither will they continue to produce Iron at the present prices and accumulate stocks on the furnace banks. Curtailment of production has been quite extensive during the month of December, and will, without doubt, show a decline of some 600,000 tons, while it is believed that in the month of January a further decline is to be expected. Just how great this will be is problematical at this time, but it is believed by some in the trade that it will show a further decrease of several hundred thousand tons. This should bring the production of Pig Iron pretty close to the consumption, and will probably enable prices to be held at about to-day's figures until business conditions generally show material betterment. On the basis of production and consumption, makers have determined on a range of prices which are now effective, and practically all the leading producers have expressed a willingness, it is understood, not to sell below those figures. This range of prices shows an advance of from 25c. to 50c. a ton above those which have prevailed recently. Sales have been made during the week at lower figures, but these were before the new prices went into effect or had been covered by options which had not expired at the time. No. 2 X Foundry Iron has been in considerably better demand. and has been sold in varying quantities, ranging from 100 tons up to 1000-ton lots, for delivery during the first quarter and half of the year, at prices close to $18, delivered. Forge Iron has not been in very good demand, and what few sales have been made were of small lots only, at prices close to $16.50, delivered. Consumers of Basic Iron have not been in the market, as mills have, as a rule, bought fairly well ahead. A few small sales of Low Phosphorus Iron have been made for early delivery, at prices in the neighborhood of $25, delivered. The demand for some brands of Virginia Irons has increased quite largely since the first of the year, and considerable business in these Irons, which was evidently held over until after the close of the year, has been placed. Most of the Iron sold has been No. 2 X and No. 2 Plain Foundry, the tonnages ranging from 200 upward, including several of 1000, the delivery being largely through the first quarter and first half of the year, at prices which were close to $15.50, furnace, for No. 2 X and $15 to $15.25, furnace, for No. 2 Plain. Southern Iron is still held firmly, at $13.50, furnace, for No. 2 X Foundry, but sales in this territory are reported very scarce. Prices which are quoted below are those which have been determined upon as the minimum by the majority of the producers, for delivery in buyers' yards, Philadelphia and adjoining territory:

No. 2 X Foundry	$18.25 to $18.50
No. 2 Plain	17.75 to 18.00
No. 3 Foundry	17.25 to 17.50
Gray Forge	16.50 to 16.75
Basic	17.25
Low Phosphorus	24.50 to 25.00

Ferromanganese.—The demand is extremely light, the business done during the past few weeks having been confined to occasional broken lots. Quotations remain practically unchanged at $48 to $49, Baltimore.

Steel.—New business is scarce, and mills are still idle. There has been some inquiry, but there is no disposition to place orders, even when concessions in price are made. Quotations are nominally $30 to $31 for ordinary Rolling Steel, and $33 to $35 for Forging Steel, but makers would accept business at $2 per ton under these figures for round lots to start things moving.

Plates.—Several orders, which were temporarily held up, have been placed during the past week, and Plate makers note a moderate improvement in the demand. Mills are now getting enough day to day business to keep them in operation at about half their capacity. Specifications are coming out a little more freely, one maker in this territory receiving specifications for 1000 tons of boat and bridge Steel. Prices of Plates are being well maintained as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel	1.85	1.90
Flange or Boiler Steel	1.95	2.05
Commercial Firebox	2.05	2.10
Marine	2.25	2.30
Locomotive Firebox Steel	2.35	2.40

The above are base prices for ¼-in. and heavier. The following extras apply:

	Extra per 100 lb.
3-16-in. thick	$0.10
Nos. 7 and 8, B. W. G	.15
No. 9, B. W. G	.25
Plates over 100 to 110 in	.05
Plates over 110 to 115 in	.10
Plates over 115 to 120 in	.15
Plates over 120 to 125 in	.25
Plates over 125 to 130 in	.50
Plates over 130 in	1.00

Structural Material.—Mills have taken on more orders since the first of the year, and indications are thought favorable for a continued moderate business. No large contracts have been placed, although a few are expected to be closed at an early date. Meanwhile orders have been largely of a miscellaneous character. Prices are firmly maintained, and are quoted at 1.85c. to 2c., according to specification.

Bars.—The situation regarding Bars shows practically no change. The demand has been light, and while some mills have started up on part time, others are still idle. There is practically no buying for forward delivery, buyers taking, as a rule, only enough to take care of their immediate wants. Prices are being fairly well maintained at 1.75c. for Best Refined Iron for delivery Philadelphia and nearby points.

Sheets.—There has been some improvement in the demand, and some of the mills in this territory, which have been shut down for several weeks, have restarted on about half capacity. The business coming out is mostly made up of small orders for early delivery, no orders for forward delivery having been booked.

Old Material.—The market continues extremely inactive. The trade is marking time and awaiting further developments. Railroads are not disposing of Scrap very extensively at present prices, and the greater part of the business done has been between dealers. Quotations are, therefore, entirely nominal and are governed by individual conditions. For prompt shipment we quote the following range, delivered in buyers' yards, Philadelphia and adjoining territory:

No. 1 Steel Scrap and Crops	$11.50 to $12.00
Low Phosphorus	16.00 to 16.50
Old Steel Axles	18.00 to 18.50
Old Iron Axles	23.00 to 24.00
Old Iron Rails	16.50 to 17.50
Old Car Wheels	19.00 to 20.00
Choice No. 1 R. R. Wrought	14.00 to 14.50
Machinery Cast	15.50 to 16.00
Wrought Iron Pipe	11.50 to 12.00
No. 1 Forge Fire Scrap	10.50 to 11.00
No. 2 Light Iron	8.00 to 8.50
Wrought Turnings	9.00 to 9.50
Stove Plate	12.50 to 13.00
Cast Borings	7.00 to 7.50
Grate Bars	13.00 to 13.50

Coke.—The market shows no particular change. A lot of 5000 tons of Connellsville Furnace Coke, for early delivery, has been done at $1.90 at oven, although the price for prompt Coke is in most cases still being held at $2 at oven. Foundry Coke is held at $2.50 at oven for prompt shipment, and from $2.75 to $3 at oven, according to grade, for forward delivery. Quotations, Philadelphia and nearby territory, would therefore range about as follows:

Connellsville Furnace Coke	$4.15 to $4.40
Foundry Coke	4.65 to 5.15
Mountain Furnace Coke	3.85 to 4.15
Foundry Coke	4.35 to 4.60

The recently organized Smith-Booth-Usher Company, Los Angeles, Cal., is a consolidation of the S. J. Smith Machinery Company and L. Booth & Sons, both firms long identified with the manufacture and distribution of machinery and supplies at that place. The offices and warerooms require the entire building at 212-214 South Los Angeles street, which is 40 x 150 ft., comprising five floors and basement. The company handles a large line of mill and mining machinery and supplies, including boilers, engines and other motive power equipment.

Pittsburgh.

PARK BUILDING, January 8, 1908.—(*By Telegraph.*)

Pig Iron.—Of the 19 merchant blast furnaces in the two valleys only seven are in blast at this writing, and two of these will likely go out this week. The active stacks are one Shenango, one M. A. Hanna & Co., Girard, Mary at Lowellville, one Brier Hill, Sharpsville Furnace and the stack of the Youngstown Steel Company. While there is a little more inquiry for Pig Iron, very little new tonnage is being actually closed. The furnace interests are endeavoring to maintain the price of Bessemer at $18.50, Valley furnace, but some of the dealers have secured control of fair sized lots which they are offering for January, February and March shipment as low as $18, at Valley furnace. Only small lots of Foundry are being sold, and we quote Northern No. 2 for first quarter shipment at $16.75 to $17, Valley furnace, but some furnaces continue to quote $17.50. There is practically no inquiry for Basic, which we quote at $17, Valley furnace. The same is true of Gray Forge, and we quote Northern Forge at $16.50, Valley furnace, or $17.40, Pittsburgh.

Steel.—Most of the finishing mills that use Steel are shut down, and none is being sold. We continue to quote Bessemer and Open Hearth Billets nominally at $28, and Forging Billets at about $30, Pittsburgh. The official price of Sheet and Tin Bars is $29, Pittsburgh.

(*By Mail.*)

The principal events of the week were the price reductions of $4 a ton on Galvanized Sheets, $2 a ton on Black Sheets and 20c. per base box on Tin Plate, all effective January 6, and reductions in wages of Coke workers averaging about 9 per cent. by the H. C. Frick Coke Company and most of the independent Coke interests, which went into effect January 1. Advices from a number of sales managers of leading Steel companies are to the effect that specifications against contracts for the first week in this month are slightly better than in the first week in December. The general feeling is also more hopeful, and there is no doubt whatever that the money situation is better, the issuance of Clearing House checks by manufacturing concerns for payrolls having almost entirely disappeared. It is the opinion that the worst is over, and that while improvement will be slow, it will show progress, but it is also believed that January, February and March will be quite dull months. The output of Pig Iron continues to be further restricted. Of the 19 blast furnaces in the two valleys that sell their Iron in the open market, only eight are in operation at this writing, and two or three more stacks will blow out this month. The Republic Iron & Steel Company may soon start one of its blast furnaces at Haselton, Ohio, as it is running short of metal. This company has this week started its Bessemer Steel plant and Valley mills at Youngstown, and its Shafting works there is also running full. The Youngstown Sheet & Tube Company is operating its Bessemer Steel plant and practically all of its Finishing mills full time this week, and indications are good for next week. The American Sheet & Tin Plate Company has started up in part several of its Sheet and Tin Plate mills, and is operating a greater percentage of its Sheet and Tin Plate capacity now than in December. The reduction in wages of Coke workers has naturally led to lower prices on Coke, and strictly Connellsville Furnace Coke on contracts for first half of this year has been offered as low as $2 a ton at oven, but some business was closed recently at higher figures.

Ferromanganese.—In the absence of any new business, we quote 80 per cent. foreign Ferro nominally at $49 to $50, Pittsburgh. If any tonnage was wanted, probably the lower price would be shaded.

Muck Bar.—The market is absolutely bare of new business, but we continue to quote best grades of Muck Bar, made from all Pig Iron, at, nominally, $29, Pittsburgh. Probably this price would be shaded on a firm offer.

Wire Rods.—Most of the leading Wire mills are closed down for lack of orders, and the demand for Rods is stagnant. We quote Bessemer and Open Hearth Rods nominally at $34, Pittsburgh, but on a firm offer and for any considerable tonnage this price would be shaded.

Steel Rails.—The largest contract for Standard Sections taken during the week by the Carnegie Steel Company was for 500 tons, and in addition some smaller lots were placed. It is expected that any day now several of the leading roads, including the Pennsylvania, Baltimore & Ohio, Lake Shore and Norfolk & Western, may place their contracts for 1908 delivery, as negotiations with these roads have reached such a stage that the contracts will hardly be withheld much longer. The demand for Light Rails is only fair and most of the business is going to the mills that reroll Rails, and which are naming lowest prices. Regular prices on Light Rails, which are shaded about $3 a ton, are as follows: 25 to 45 lb., $30; 20-lb., $31; 16-lb., $32; 12-lb., $34; 10-lb., $36, and 8-lb., $40. We quote Standard Sections at $28, at mill, and Angle Splice Bars at 1.65c., at mill.

Plates.—New orders continue to be for small lots only and for actual needs. The leading Plate mills are pretty fast cleaning up contracts on their books, and unless some large tonnage is placed this month it is likely that some of the mills now running will have to close early in February for lack of orders. While prices are fairly well maintained, concessions of about $2 a ton, mostly in narrow Plates, are still being made. Regular prices are as follows: Tank Plates, ¼-in. thick, 6¼ in. up to 100 in. wide, 1.70c., base, at mills, Pittsburgh. Extras over this price are as follows:

	Extra per 100 lb.
Gauges lighter than ¼-in. to and including 3-16-in. Plates on thin edges	$0.10
Gauges Nos. 7 and 8	.15
Gauge No. 9	.25
Plates over 100 to 110 in.	.05
Plates over 110 to 115 in.	.10
Plates over 115 to 120 in.	.15
Plates over 120 to 125 in.	.25
Plates over 125 to 130 in.	.50
Plates over 130 in.	1.00
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
"A. B. M. A." and ordinary Firebox Steel Plates	.20
Still Bottom Steel	.30
Marine Steel	.40

Shell grade of steel is abandoned.

TERMS.—Net cash 30 days. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes, 14 in. wide down to 6 in. of Tank, Ship or Bridge quality.

Structural Material.—No local contracts have been placed in the past week, the situation being very quiet. Some work is in prospect, but owing to present monetary conditions it will likely be some time before it comes out. We quote: Beams and Channels, up to 15 in., 1.70c.; over 15 in., 1.80c.; Angles, 3 x 2 x ¼ in. thick, up to 6 x 6 in., 1.70c.; 8 x 8 and 7 x 3½ in., 1.80c.; Zees, 3 in. and larger, 1.70c.; Tees, 3 in. and larger, 1.75c.; Bulb Angles and Deck Beams, 2c. Under the Steel Bar card Angles, Channels and Tees under 3 in. are 1.70c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Sheets.—As foreshadowed in this report last week, prices on Blue Annealed Sheets have been reduced $1 a ton, Black Sheets $2 (except gauges 29 and 30, which were cut $3), Galvanized Sheets $4 (except gauges 29 and 30, which were reduced $6), Painted Roofing Sheets 10c. per square and Galvanized Roofing Sheets 15c. per square, the new prices going into effect on January 6. Opinion is divided as to whether these reductions in prices of Sheets will stimulate the demand, which at present is stangant, most of the Sheet mills being shut down for lack of orders. The new prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c. No. 28 Painted Roofing Sheets $1.75 per square and Galvanized Roofing Sheets, No. 28, $3.10 per square for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

Tin Plate.—Effective January 6, prices on Tin Plate were reduced 20c. per base box. Whether the reduction will stimulate demand remains to be seen, some of the trade believing that it will, while others state it will have the effect of causing buyers to hold off still further. We are advised that some business has been taken at the new prices, but the general demand is very quiet. We quote at $3.70 for 100 lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

Iron and Steel Bars.—Several leading makers of Steel Bars advised us that so far this month specifications against contracts are better than in the corresponding period in December. However, new orders in both Iron and Steel Bars are very light, and some of the mills continue closed entirely, while others are running to only about half capacity. In the face of the present dull trade prices are being well maintained and we continue to quote Iron and Steel Bars on the basis of 1.60c., Pittsburgh.

Spelter.—The demand continues dull, and prices have again reacted, prime grades of Western Spelter being offered at 4c., St. Louis, equal to 4.12½c., Pittsburgh. Even this low price, which smelters claim is below cost of production, does not have the effect of stimulating the demand.

Hoops and Bands.—New business is light, and has been for several months, but specifications against contracts are still coming in, but not at a satisfactory rate. The four concerns rolling Steel Hoops and Bands are said to be strictly maintaining prices.

Spikes.—None of the mills making Spikes have any orders on their books to speak of, buyers placing orders only for actual needs. We quote Railroad Spikes at $1.85 to $1.90 and smaller sizes at $1.95 to $2 per 100 lb., f.o.b. Pittsburgh.

Merchant Steel.—The mills report that specifications against contracts are showing some signs of getting better, but new demand is practically stagnant. This is also true of Shafting, new business in which has been light for some time and does not promise early improvement. We quote nominally as follows: Cold Rolled Shafting at 54 per cent. off in large lots and 48 per cent. off in carload lots, delivered in base territory; Smooth Finished Machinery Steel, 1.85c. to 2c., depending on quality; Flat Sleigh Shoe, 1.65c. to 1.75c.; Cutter Shoe, 2.15c. to 2.20c.; Toe Calk Steel, 2.10c. to 2.15c.; Railroad Spring Steel, 1.75c. to 1.80c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades, and 10c. and upward for special grades.

Merchant Pipe.—The leading Pipe mills continue to work closely together, and it has been decided not to make any change in prices for the present at least, it being the sense of the manufacturers that to readjust prices on a lower basis at this time would not stimulate the demand. A fair amount of tonnage is being placed, and specifications against contracts are said to be coming in a little more freely. We are advised that prices on Steel Pipe are being firmly held, but on Iron Pipe concessions are being made. The net discount on Steel Pipe to the large trade on ¾ to 6 in. is 74 and 5 per cent. off list, while on Iron Pipe ¾ to 2 in., 71 and 5 per cent., and over 2 to 6 in., 70 and 5 per cent. are quoted. Discounts on Steel Pipe are as follows:

Merchant Pipe.

	Jobbers, carloads. Steel.	
	Black.	Galv.
	%	%
⅛ to ¼ in.	65	49
⅜ in.	67	53
½ in.	69	57
¾ to 6 in.	73	63
7 to 12 in.	70	55
Extra strong, plain ends:		
⅛ to ⅜ in.	58	46
½ to 4 in.	65	53
4½ to 8 in.	61	49
Double extra strong, plain ends:		
½ to 8 in.	54	43

To the large trade all above discounts are subject to 1 point on the base, and 5 per cent. on the net.

Boiler Tubes.—New business is light, the railroads not placing any tonnage of moment, while the demand for Merchant Tubes is also dull. Discounts on Merchant Tubes, which are more or less shaded, are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ in.	42	47
1¾ to 2¼ in.	42	59
2½ in.	47	61
2¾ to 5 in.	52	65
6 to 13 in.	42	59

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

Coke.—Effective January 1, wages of Coke workers were reduced by the H. C. Frick Coke Company and other independent Coke operators on an average of about 9 per cent. This reduction has had the natural effect of causing lower prices to be made on Coke, and we are advised that Connellsville Furnace Coke, on contracts for shipment over first three months and first six months of this year, has been quoted as low as $2 per ton at oven. We note, however, that some business in Connellsville Furnace Coke has been placed at $2.15 and $2.25, at oven. Connellsville 72-hr. Foundry Coke is being quoted at $2.40 to $2.65 per ton, at oven. The Upper and Lower Connellsville regions made last week only 107,053 tons. It is probable that their output this week will be less than 100,000 tons, the smallest for some years.

Iron and Steel Scrap.—The market is absolutely stagnant, no sales being made on which to base prices. We omit quotations, as they would be absolutely valueless.

The Bessemer & Lake Erie Railroad, owned and operated by the Carnegie Steel Company, Pittsburgh, expects to lay about 70,000 steel ties this year in new construction, while 70,000 such ties will be used by the road for renewals and repairs at points where wooden ties are now used.

Birmingham.

BIRMINGHAM, ALA., January 6, 1908.

Pig Iron.—A marked improvement is noted in the number of inquiries received, and the sales which have resulted are greater in proportion than formerly. Some requests are reported for quotations on deliveries as far advanced as the third quarter, which are believed to be bona fide, and the sincerity displayed in inquiries by prospective purchasers of significant lots, generally, is encouraging. It is true that the tonnage actually booked is small as compared with what would have been expected under normal conditions, but in view of the lack of evidence that bottom prices have been reached, together with the fact that new business in foundry trades has been slow to develop, the market is about as active as could be expected. Sales aggregating an attractive tonnage are reported to have been made on a basis of $14, f.o.b. Birmingham, but this price has not been maintained, and $13.50 on the same basis is freely quoted. The sale of 1000 tons reported at figures around $13, f.o.b. Birmingham, is understood to have been made under special conditions, and it is not believed that additional tonnage could now be had from the same source at this price. The quotations now established are general, producers who heretofore have not been in the market having quoted on this basis; but there is no display of eagerness to close contracts for advance deliveries, and it may be said that an effort to maintain present prices is anticipated. Repairs are being made to idle stacks in some cases, and with the completion of the new stack of the Birmingham Coal & Iron Company, which will be accomplished about March 1, the producing capacity will no doubt be able to meet an increased demand on short notice. It is also to be noted that effective steps have recently been taken toward an adjustment of the wage scales, and the indications are favorable for a material decrease in the cost of production.

Cast Iron Pipe.—Sales of small lots for maintenance work form the feature of the market, and notwithstanding the fact that indications are favorable for some lettings of consequence in the future, the prospects for an immediate improvement are not bright. Inquiries have been made which lend a cheerful tone to the situation, but it is generally conceded that purchasers will not be disposed to make contracts until it can be better judged what the ultimate level reached in Pig Iron prices will be. Owing to the lack of a firm demand, only nominal quotations are warranted, and we quote as follows, per net ton, f.o.b. cars here: 4 to 6 in., $30; 8 to 12 in., $29; over 12-in. average, $26, with $1 per ton extra for Gas Pipe.

Old Material.—Some requests are reported for quotations on future deliveries, but no sales have resulted and the market is extremely quiet. In view of the fact that indications favor an early increase in consumption, dealers are more encouraged, but a readjustment of prices is conceded imminent and developments in the Pig Iron market are being awaited with interest. We quote nominally as follows, per gross ton, f.o.b. cars here:

Old Iron Rails	$22.00 to $22.50
Old Iron Axles	18.50 to 19.00
Old Steel Axles	17.00 to 17.50
Old Car Wheels	20.50 to 21.00
No. 1 Railroad Wrought	17.50 to 18.00
No. 2 Railroad Wrought	13.00 to 13.50
No. 1 Country Wrought	14.50 to 15.00
No. 2 Country Wrought	12.00 to 12.50
Wrought Pipe and Flues	13.50 to 14.00
Railroad Malleable	14.00 to 14.50
No. 1 Steel	13.50 to 14.00
No. 1 Machinery Cast	12.50 to 13.00
Stove Plate and Light Cast	9.25 to 9.75
Cast Borings	6.75 to 7.25

The E. H. Mumford Company has acquired by purchase all the patent rights, molding machines and equipment of Ph. Bonvillain and E. Ronceray in the United States, and has added to its molding machine line these very important machines and pattern processes. The offices of the E. H. Mumford Company will be removed from Seventeenth and Callowhill streets, their present location, to 1315 Race street, Philadelphia, where the French machines have for some months been installed as a working exhibit.

The monthly report of the Treasury Department gives the amount of money in circulation on January 1, as $3,078,989,298, or $35.48 per capita, the highest figure per head ever reached. On January 1, 1907, the average was $33.78. The actual increase in the year was $195,088,970, of which $70,747,715 was in December. The Treasury experts estimate the population of the United States as 86,734,000.

Metal Market.

NEW YORK, January 8, 1908.

Pig Tin.—An improvement in the volume of business is noted, and it is probable that 400 tons were disposed of during the week. This was principally in orders for future delivery, which command premiums over spot. Price changes during the week have been as follows:

	Cents.
January 2	26.75
January 3	26.35
January 4	26.35
January 6	27.15
January 7	27.30
January 8	26.75

The Pig Tin situation has improved substantially, and while there may be lower prices the following points should not be lost sight of. Deliveries of Tin for three months have been the smallest in a decade. No large stocks exist. The world's visible supply at the end of December was 12,058 tons, which was nearly 1000 tons less than that at the end of 1906. Every indication points to a large business in Tin Plate during the next few months. Tin Plates are a necessity, and are used for cans good years or bad. No stocks have been accumulated at the mills, and there must be some buying of Pig Tin. The London market closes at £121 5s. for spot and £122 5s. for futures.

Copper.—Prices are steadily advancing. Actual business, although limited, shows a noticeable increase. Europe continues to buy, and American consumers are becoming somewhat alarmed over the large takings by these European interests. Fundamentally, the Copper market is on a sounder basis than for some time, for it has been demonstrated twice that 13c. is a level at which speculative buying comes in and rapidly absorbs the floating supply. This supply as far as America is concerned continues to grow less. No one in the trade pretends to believe that European melters had immediate use for the 100,000 tons purchased during the last three months and 10,000 tons additional sent in January, but many seem to forget that the invisible supplies in Europe were down to a very low ebb. Manufacturers made contracts and did not purchase metal to fill these contracts. Supplies in the hands of manufacturers, jobbers and dealers were the lowest in years. In fact, Europe has been short of Copper for six months. The demand from domestic consumers is not what could be called brisk, but it is believed that the best interests in the trade can be better served by keeping the market on a steady level with only a slight upward tendency until the financial situation clears further. The advance during the last week can be very properly attributed to improved financial conditions, and a growing belief that funds will be easier. This is already manifesting itself. It will be some time, however, before the ambitious schemes of many railroads as to the electrification of urban lines can be carried out. Lake Copper can be quoted at 13.87½c. to 14.12½c., net cash. Producers refused to accept firm offers at 13.87½c. for round lots on Tuesday. Electrolytic is quoted at 13.75c. to 14c., net cash, the inside figure representing buyers' views, but there is no metal to be had from first hands at that figure. Prime casting commands 13.50c. to 13.75c. The total exports of Copper for December were about 38,000 tons exclusive of Pacific ports. The total exports for the year 1907 were about 229,000 tons, compared with 205,500 tons during 1906. This shows an increase of 23,500 tons. The imports of Copper for the month of November amounted to 8300 tons, showing a falling off compared with the previous month, owing to the curtailment of Mexican production. The exports so far this month are 8174 tons. The London market is easier at £61 15s. for spot and £62 15s. for futures. Best selected is held at £66.

Waterbury Average.—The Waterbury average for December was 13.75c.

Pig Lead.—The leading producer is taking most of the business. Offers by consumers for future shipments are not entertained by producers. Prices are without change, at 3.65c. to 3.75c., New York, and 3.60c., St. Louis.

Spelter.—Prices are firmer, due to prospects of better business from Galvanizing works on account of the expected improved demand for Sheets due to the lower price. The price in New York is 4.40c. to 4.45c., although a car or two was on the market Tuesday which could have been had under that figure. The St. Louis market is much firmer, at 4.27½c.

Antimony.—The market looks stronger, but it is hard to see how there can be any great permanent improvement with the large amount of metal now coming in. Hallett's can be imported at about 8.75c., Cookson's at about 9.25c.

Nickel.—No change has occurred in the price of Nickel, which rules at 45c. for ton lots, and 55c. to 60c. for smaller quantities.

Tin Plate.—The expected cut was announced January 6. The reduction, which is the first change in price since October, 1906, was 20c. per base box, bringing the price of 100-lb. IC Plates down to $3.70, f.o.b. Pittsburgh, and $3.89, f.o.b. New York. The mills have been running on greatly reduced time for over three months, and there are no large stocks. An increased demand may be expected, which, however, will not be in full swing for a month at least.

Old Metals.—More interest is being taken in the market for Old Metals, but business is small, and the following dealers' buying prices are more or less nominal:

	Cents.
Copper, Heavy Cut and Crucible	13.00 to 13.25
Copper, Heavy and Wire	12.50 to 13.00
Copper, Light and Bottoms	11.50 to 11.75
Brass, Heavy	10.00 to 10.50
Brass, Light	7.75 to 8.00
Heavy Machine Composition	12.00 to 12.50
Clean Brass Turnings	8.50 to 8.75
Composition Turnings	10.50 to 11.00
Lead, Heavy	4.00
Lead, Tea	3.75
Zinc, Scrap	3.75

New York.

NEW YORK, January 8, 1908.

Pig Iron.—There have been some round sales of Foundry Iron in this city, by local founders, for delivery during the first quarter. The majority of sellers have withdrawn former prices, and are now quoting on the basis of $18.50, Jersey City, for Northern Iron, and $13.50, Birmingham, for Southern Iron. We quote, at tidewater, $19.00 to $19.25 for No. 1 Northern Foundry, $18.50 to $18.75 for No. 2 Foundry, $18 to $18.25 for No. 2 Plain, and $17 to $17.25 for Gray Forge. Southern Iron is quoted $18 to $18.25 for No. 1 Foundry, and $17.50 to $17.75 for No. 2 Foundry.

Steel Rails.—Railroad interest in the situation is still wanting, and the Bessemer Rail mills are practically at a standstill, with little prospect of early activity. The financial phase of the Rail situation is just now uppermost, and settlements for Rails already delivered are in some cases of as much importance as the placing of business for the year ahead.

Structural Material.—The absence of bridge work makes the beginning of the new year exceedingly quiet for fabricating companies. Some time will naturally elapse, also, before the new construction that may be expected to result from a gradual accumulation of money. Among work on which bids have gone in, but on which no award has been made, is 4000 tons for a building at the Forty-second street terminal of the New York Central. The entire construction will require 12,000 tons more eventually. There is also pending 1500 tons of viaduct work, connecting the New Haven station at Providence, R. I., with the tunnel of the East Providence Branch. This work will require 4000 tons in all. The municipal contracts in New York develop slowly. Of 30,000 tons of Steel for eight piers awarded last year only the 7000 tons needed for two piers will be taken for the present. Fabricating shops have several months' work ahead, but deliveries are in reduced volume, and shop schedules are adjusted accordingly. We continue to quote mill shipments, tidewater deliveries, as follows: Beams, Channels, Angles and Zees, 1.86c.; Tees, 1.91c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Material cut to length is sold from stock at 2¼c. to 2½c.

Bars.—While the current demand is light, Bar Iron manufacturers are quite firmly maintaining the old price of 1.60c., Pittsburgh, or 1.76c., tidewater. It is understood that a few of the Eastern Bar Iron mills resumed operations on Monday, but in practically every case these mills have an outlet for their product in some finished form, so that little comes on the market in the form of Bars. It will be some time until orders accumulate in sufficient quantity to enable many of the mills to resume active operations. Steel Bars are firmly held at 1.60c., Pittsburgh, or 1.76c., tidewater, with only a moderate demand.

Plates.—Local trade appears to be confined to small quantities for immediate shipment. About the largest orders recently placed were for 50 tons or less. The new work pending in this locality, which will require considerable quantities of Plates, will probably not be in shape for the placing of the actual orders for some time. It is understood that the subject of a reduction in prices is now under consideration by the leading Plate manufacturers. Prices up to the present have been maintained as follows for tidewater delivery: Sheared Tank Plates, 1.86c. to 1.96c.; Flange Plates, 1.96c. to 2.06c.; Marine Plates, 2.26c. to 2.36c.; Fire Box Plates, 2.75c. to 3.50c., according to specifications.

Cast Iron Pipe.—A rather better feeling is noted. Inquiries for small quantities are growing a little more numerous, some of the New England towns beginning to ask for bids on their requirements for the approaching season. New York City is getting ready for some of the work laid out for this year, and it is understood that it will soon advertise for bids on about 5000 tons. The 1000-ton contract for the city of Richmond, Va., which was let last week, was secured by the Glamorgan Pipe & Foundry Company, Lynchburg, Va. Competition for this business was exceedingly sharp. Car-

load lots of 6-in. are quoted at about $28.50 per net ton at tidewater, with concessions on larger quantities.

Old Material.—Special weakness is observed in such material as Relaying Rails for which there is practically no demand, while railroad companies continue to bring forward fresh offerings. Within the past week a railroad in the North has asked for bids on 3000 tons of 56-lb. Relaying Rails as well as about 3000 tons of other kinds of track material including 500 tons of Old Iron Rails. Dealers are disinclined to make bids on this lot of Relayers, except at prices which are much under those recently quoted. In other grades of Old Material a little more stability is observed, as it is evidently expected that as the month passes more and more manufacturing establishments consuming Scrap will get in active operation and may need considerable stock. Quotations per gross ton, New York City, are as follows:

Old Girder and T Rails for melting	$8.50 to $9.00
Heavy Melting Steel Scrap	8.50 to 9.00
Old Steel Rails, rerolling lengths	10.00 to 11.00
Relaying Rails	15.00 to 16.00
Old Iron Rails	14.00 to 14.50
Standard Hammered Iron Car Axles	17.00 to 18.00
Old Steel Car Axles	14.00 to 14.50
No. 1 Railroad Wrought	10.50 to 11.50
Iron Track Scrap	9.50 to 10.00
No. 1 Yard Wrought, long	10.00 to 10.50
No. 1 Yard Wrought, short	9.50 to 10.00
Light Iron	4.50 to 5.50
Cast Borings	4.50 to 5.00
Wrought Turnings	6.00 to 6.50
Wrought Pipe	8.00 to 8.50
Old Car Wheels	15.00 to 15.50
No. 1 Heavy Cast, broken up	12.00 to 12.50
Stove Plate	11.00 to 11.50
Grate Bars	8.50 to 9.00
Malleable Cast	11.00 to 11.50

Iron and Industrial Stocks.

NEW YORK, January 8, 1908.

The stock market has steadily been gathering strength with the improvement in the financial situation. More interest is evidently being taken in all kinds of stocks which have a sound basis of values, and quotations have therefore risen with the improvement in the demand. The range of prices on active iron and steel stocks from Thursday of last week to Tuesday of this week has been as follows: United States Steel common 25¾ to 27¼, preferred 87¼ to 90; Car and Foundry common, 30 to 32, preferred 88 to 90; Locomotive common 34⅜ to 38, preferred 85½ to 87; Steel Foundries common 6½, preferred 29 to 29⅜; Colorado Fuel 19 to 21¼; Pressed Steel common 19½ to 20½, preferred 69 to 70; Railway Spring common 26⅛ to 28; Republic common 16 to 17, preferred 66¼ to 69½; Sloss-Sheffield common 36 to 38; Cast Iron Pipe common 19½ to 21⅛, preferred 56⅝ to 58½; Can common 4¼ to 5⅛, preferred 44 to 51. Last transactions on active stocks up to 1.30 p.m. to-day are reported as follows: United States Steel common 26⅝, preferred 89⅜, bonds 88; Car & Foundry common 31, preferred 81⅞; Locomotive common 36⅞, preferred 87; Colorado Fuel 19⅜; Pressed Steel common 20, preferred 70⅛; Railway Spring common 28; Republic common 16¾, preferred 69; Sloss-Sheffield common 38; Cast Iron Pipe common 20½, preferred 58½; Can common 4¾, preferred 51.

Receivers of the Westinghouse Machine Company, Pittsburgh, are notifying holders of the debenture certificates, due 1920, that they will pay the January coupon at the office of the Fidelity Title & Trust Company, Pittsburgh.

The receivers of the Westinghouse Electric & Mfg. Company have notified holders of the convertible sinking fund gold bonds, due 1931, and debenture certificates, due 1913, that the coupons due January 1 will be paid at the Farmers' Deposit National Bank, Pittsburgh. The receivers have made formal application to the court for permission to pay the January interest on the $18,500,000 bonds. The interest on $6,000,000 bonds, due February 1, will, it is said, be paid when it becomes due, as the receivers have the necessary cash on hand.

Dividends.—The Board of Directors of the Riehle Brothers Testing Machine Company, Philadelphia, at a meeting held at the office December 30, declared an annual dividend of 6 per cent. on the capital stock for the year 1907.

The Standard Underground Cable Company has declared the regular quarterly dividend of 3 per cent. and an extra dividend of 3 per cent., payable January 10.

The Harbison-Walker Refractories Company, Pittsburgh, has declared a quarterly dividend of 1½ per cent. on the preferred stock, payable January 20.

According to the North German Lloyd Line, which has made a careful computation, more than $110,000,000 was taken out of the United States by the immigrants who returned to their native places last year. It is estimated that each of the 550,045 foreigners had about $200 with him. On the other hand, it is figured that 1,364,688 aliens who arrived last year brought with them about $27,293,760, though much of this had been furnished by relatives or friends in the United States.

Charles M. Schwab's Views.

The annual review of the New York *Times*, printed January 5, gave the following statement by President Charles M. Schwab, of the Bethlehem Steel Corporation:

It is impossible at the moment to make any definite predictions with regard to the business conditions that are likely to develop during the year 1908, nor would it be wise under prevailing conditions to attempt to figure out when the present depression will end and the upward healthy movement begin. Nothing is gained by any such attempt to make definite forecasts, but there are some general deductions that may be made and which can be based on the actual facts existing at the present time and on the historical data of half a century.

You must not lose sight of the undoubted prosperity of the country while you are studying the recent panic and the present depression. It must be admitted that the depression is severe and entirely logical in view of the financial developments of the past three months; yes, of the past year. Fundamental conditions are splendid, and I have not the least doubt that the recovery in business in every line will be quick and effective. It takes a little time to restore confidence, but when the basic situation is all right that can be accomplished easily enough.

So far as the future of our country's business is concerned, I have not seen anything that does not indicate the greatest possible prosperity. I am talking broadly now, not taking specific and isolated facts, but looking rather at the business of the country generally and its future. In the steel and iron trade, with which I am familiar, every year marks an increase, and every year in the future will continue to show an increase, a betterment and a broadening and extension, keeping pace with the country's needs and the country's world position.

We may have, we shall have, periods of depression like the present, but they are just incidents, economic incidents, eventually making for sounder and better conditions. The ultimate trend will be upward always, and I do not recall any period of prosperity in the past that, in my opinion, will equal the normal condition of this country in the future. There is no cause for pessimism if the outlook be viewed in the light of common sense and obvious logic. I am an optimist, and my optimism is based on an intimate knowledge of the iron and steel trades in this country.

Aids to Cheerfulness.—The Du Bois Iron Works, Du Bois, Pa., maker of high grade machinery castings and gas engines, producers and pumps, is sending out an exceedingly cheerful letter calculated to help relieve anxiety over the present business conditions, and showing that the company is not at all dismayed. Other industrial companies are sending out similarly optimistic letters. One from the S. Obermayer Company, Cincinnati, states that from its point of view the worst of the present financial flurry is about over, and it looks forward to a brighter year in 1908. The *Publicity Magazine*, published by the Underfeed Stoker Company of America, Chicago, is similarly buoyant, and in extending its holiday greetings adds that it is "confidently expectant of a speedy return of the business conditions prevailing during the past few years." The Chain Belt Company, Milwaukee, Wis., adds its efforts in the same line, citing the highly favorable condition of our foreign trade as evidence of the substantial basis on which business conditions rest.

The Autopress Company, New York, manufacturer of printing presses, has moved its general offices to the Barclay Building, 299 Broadway.

The Machinery Trade.

NEW YORK, January 8, 1908.

The first week of the new year brought forth but little new business, and that reported covered chiefly small lots of tools and was distributed generally among machinery houses. The increase in inquiries noted the two previous weeks had led to the belief that the past week would experience a more active demand for machinery, but contrary to expectations there appears to have been no improvement in any direction. Not only were there no sizable orders reported placed, but no inquiries worthy of mention were received, and the volume was rather small. It was expected that at least one of the two small lists upon which bids were submitted a few weeks ago would be closed by this time, but these are still pending, with a prospect of purchases being made within the next couple of weeks. While there is much disappointment in the way the new year opened, merchants are hopeful of renewed activity after the middle of the month, by which time it is thought some of the present adverse conditions will be straightened out. Until the financial situation clears up it is doubtful whether large purchasers will come into the market very freely. It is the opinion among machinery men that this feature of trade will show a perceptible improvement by the end of the month. At present much complaint is heard about collections. The active propositions before the trade do not indicate any further recession in business, nor have there developed sufficient new projects to indicate a marked increase in the demand in the immediate future. Much importance is attached to the report that the Delaware, Lackawanna & Western Railroad will issue a substantial list of machinery requirements for its Scranton shops within a few days.

The demand for steel castings has improved to some extent of late, and although foundrymen in that line are not making many long term contracts, they hope that during the next two months some such business will develop. When business is good and there is a lively demand for castings foundrymen find their customers very willing to make long term contracts, but as soon as work slackens up there is a general disposition to order only in individual lots. Just now the foundrymen are fairly busy, and it is thought that when this becomes generally known their customers will show a disposition to renew long term contracts which have expired. Many of the customers whose contracts expired the last of the year gave orders for small lots instead of renewing their contracts, but it is expected that during the next two months they will see their way clear to place their business on the same basis as they did last year. Already some of the larger steel casting manufacturers have received inquiries for prices based on a year's supply, and with the business now on hand they state that they have no complaint to make regarding the outlook.

At a meeting of the Board of Governors of the Machinery Club, held at the Engineers' Club, New York, on Monday, the contracts let by the House Committee for furniture, silver ware, and other furnishings were confirmed. At the meeting considerable discussion developed over the nonresident membership fee of admission which is $10. Owing to the large number of nonresidents desiring to become members of the club it was the opinion that the fee of admission of this class of members should be raised. The matter has been referred to the Constitution Committee, which will shortly hold a meeting to revise the constitution in accordance with the suggestions of the Board of Governors, and probably within the next 90 days a meeting of the club will be called to pass on the change. A great many nonresidents are joining the club daily, and until the change in the constitution is decided upon at the meeting of the club they will be admitted to membership at the present fee.

New York, New Haven & Hartford Railroad Machinery List.

It is learned that bids are to be in this week on the machines in the list sent out a few weeks ago by the New York, New Haven & Hartford Railroad, and from this it is inferred that orders will be placed shortly. This list covers about 20 tools, including a number of woodworking machines, the principal metal working tools being as follows: One double head bolt cutter, one 42-in. steel tired car wheel lathe, one 20 x 24 in. crank planing machine, one 18-in. single head back geared shaper, two 20-in. engine lathes, one 36 x 36 in. x 12 ft. planer, one 18-in. engine lathe, two pipe cutting and threading machines, one automatic saw sharpening machine, one 20-in. water tool grinder and one cutter and reamer grinder.

It is understood that the list of the machine tools for the new Scranton shops of the Delaware, Lackawanna & Western Railroad will be before the trade very shortly. The list comprises a good sized lot of equipment, covering a general line of machinery adaptable for a large car repair plant. The mechanical department of the company has completed its investigation as to the machinery needed, and it is understood that a tabulated list of the requirements will be in the hands of the company's purchasing agent within a few days.

It is said in the trade that the Baltimore & Ohio Railroad does not intend to follow the large list sent out several months ago with purchases, but before long it is understood a list will be issued covering some of the requirements specified in the old list. This will be followed with other lists later on until the requirements specified by the company's mechanical department are met with.

The New York Central Railroad has about completed plans for additions to its shops at East Buffalo, N. Y., which include a new machine shop and a fan house. The roundhouse at that point is also to be enlarged.

The new eight-story addition to the plant of the Mergenthaler Linotype Company on Ryerson street, Brooklyn, N. Y., is rapidly nearing completion, and although the company has bought considerable equipment for the addition, it is understood that some more machinery will be needed, as it is highly probable that later on some more or less obsolete equipment now in use in the existing plant will be discarded. The new building is 165 x 174 ft., and is being constructed of concrete and brick. A reorganization of the company's mechanical department has been made, and W. W. Morehouse, formerly assistant superintendent of the plant, has been made superintendent, to succeed W. H. Radall, while E. A. Sytz, who formerly had charge of the manufacture of all the light parts of the company's machines, has been made assistant superintendent. R. M. Bedell is now in charge of the assembling department, and W. M. Brown is master mechanic.

Engine, boiler and brick making machinery are required by the Paterson Clay Products Company, New Mossop Building, Clearfield, Pa., for equipping its new plant. The company has recently been organized and is excavating and grading for its new machinery buildings and kilns, which are to be located on a site near Clearfield, adjacent to the Clearfield & Mahoning Railroad, a branch of the Buffalo, Rochester & Pittsburgh Railroad. The plant will have a daily capacity of 25,000 building and paving bricks, to be increased to 50,000 as business may warrant. Allison O. Smith is president; Alex. Paterson, secretary and treasurer, and R. H. Thompson, general manager.

The National Casket Company, 48 Great Jones street, New York, has purchased a large tract of land in Jersey City, on which it intends to erect a plant to replace its present manufacturing establishment at Hoboken, N. J. The requirements will include a good sized power plant, but as yet the plans for the new buildings have not been prepared. The engineering details are in charge of J. W. Whitmore, who can be addressed in care of the National Casket Company.

The Royal Typewriter Company, Brooklyn, N. Y., has been buying some machinery of late for its plant at Hartford, Conn., and it is understood that there are still some scattered purchases to be closed out. The company has in course of construction at Hartford one building 357 ft. long and four stories in hight, another 50 x 150 ft., four stories, and two one-story buildings, each about 50 x 130 ft.

At a meeting of the Public Service Commission last week the route for a new four track rapid transit subway, to extend from the Battery to the Bronx, was approved, and as soon as plans can be prepared the Board of Estimate will be asked to authorize the expenditure of $60,000,000, which it is estimated the road will cost. It is hoped that plans can be ready so that bids can be advertised in March.

McClave, Rimmer & Co., 90 West street, New York, have sold to the Eaton, Cole & Burnham Company, Bridgeport, Conn., a 10-ton crane. This is McClave, Rimmer & Co.'s second installation of similar equipment for that company.

Cleveland Machinery Market.

CLEVELAND, OHIO, January 7, 1908.

The general situation has shown considerable improvement since the beginning of the new year. In the machine tool market there have been a few sales of single tools during the week, and quite a number of new inquiries. While the sales were limited, the awakening of a little activity was very agreeable to dealers who had received practically nothing in the way of either orders or inquiries during December. The general feeling is better all around, and while dealers are not expecting very much business during the present month, they look for a gradual improvement of orders during the next few weeks. The orders placed during the week came mostly from concerns that were in the market with inquiries before the recent financial disturbance, but which delayed their purchases because of the money stringency

and accompanying industrial depression. Orders were not placed by a number of other concerns that made inquiries at about the same time, the delay being due to the same causes, but now that the situation has become much brighter and collections have grown much better these pending inquiries are expected to result soon in the placing of some orders for new tools. The orders and inquiries during the past few days have about all come from the smaller industrial plants. None of the new inquiries are for a large amount of machine tool equipment, but as conditions continue to grow better inquiries for a larger amount of tools are expected to come from some of the larger interests.

With the new year a turn for the better is also noticed in practically all the local manufacturing interests. Plants that shut down for inventories during the holidays started up promptly after the New Year's holiday, and every day reports are coming in of more men being put back to work. Plants that have been running on one-half or less of their capacity for six weeks or more have not resumed with their full force of men, but workmen are being taken back gradually in small lots as conditions warrant greater activity. Machine tool builders report that while orders are not yet plentiful, they have improved during the past few days, and inquiries are coming in considerably better. While no speedy resumption of industrial activity is anticipated, it is believed that every day will show a slight improvement. Secretary Philip Frankel of the Cleveland branch of the National Metal Trades Association, who has made a canvass of the local situation during the past few days, predicts that by February 1 the local factories engaged in the metal trades will be running at 75 per cent. of their normal capacity. During the rush preceding the recent depression they were being operated at about 30 per cent. above their normal capacity, according to Mr. Frankel's estimate.

The plant of the Brown Hoisting Machinery Company is running at practically full capacity with its day force of workmen. While the company is still held up on some orders for large work which was ordered suspended a few weeks ago because of the financial stringency, orders continue to come in for small work which are keeping the plant busy.

The Browning Engineering Company started up its plant January 2 after a two weeks' shutdown for the holidays. The company has considerable work on hand, and reports an improvement in its orders during the past week or two.

The Standard Pattern Works reports considerable improvement in inquiries for patterns from metal working concerns that are planning to put new machinery on the market. The works have been partially shut down for improvements for a short time, but will soon be running at full capacity.

The Defiance Pressed Steel Company, Defiance, Ohio, which was recently incorporated with a capital stock of $300,000, and in which a number of Cleveland men are interested, has elected the following officers: President, Henry Seither; vice-president, Joseph Fink; secretary and treasurer, C. C. Hoffman, all of Defiance; directors, W. H. Becker, John A. Donaldson, H. J. Slatmyer, F. H. Seither, John W. Harter, J. L. Fontaine, John Beck and Frank Seither, of Cleveland, and several Defiance men, in addition to the officers. The company, which will manufacture steel shipping cases, has taken over the plant of the Clipper Plow Company.

The Falls Rivet & Machine Company, Cuyahoga Falls, Ohio, has been given a 50-year franchise to transmit electric power through the streets of that village. The company at present has two plants. One of these is located on the river, from which water power is secured. It is the intention to increase the capacity of this plant from 500 to 1000 hp. The power will be converted into electricity, which will be used to operate the company's other plant in the village, and the surplus will probably be sold to other manufacturers.

J. W. Hance and Harry Hance, who have been operating a foundry in Plain City, Ohio, have purchased the plant of the Westerville Foundry & Machine Company from the receiver, H. P. Beery. The Plain City foundry will be removed to Westerville and combined with the foundry there.

With a capitalization of $25,000 the Davis Steam Generator & Mfg. Company, Sidney, Ohio, has been incorporated by Samuel S. Davis, Walker C. Morrison, A. W. Wells, E. L. Hoskins and Frank Lucas.

The Hann Mfg. Company, Columbus, Ohio, has increased its capital stock from $10,000 to $25,000, the increase being demanded by the company's growing business. The company makes grass catchers, rural mail boxes and other specialties. The officers are C. K. Hann, president; J. E. Dager, vice-president, and A. M. Hann, secretary.

W. H. S. Bateman, sales agent for the Champion Rivet Company, Cleveland, Ohio, has opened an office at 412 Arcade Building, Philadelphia, Pa., where the business of the company in eastern Pennsylvania, western New York and the Southern States will be looked after.

Philadelphia Machinery Market in 1907.

PHILADELPHIA, PA., January 7, 1908.

That the past year in the Philadelphia machinery market was one of the most remarkable that the trade ever experienced is without doubt. There have been years of extreme prosperity, poor years and years in which a moderate volume of business was transacted, but never before has the trade experienced the two extremes of business prosperity and almost total apathy under the conditions which prevailed during the year just concluded.

The year opened most auspiciously. December, 1906, was probably one of the greatest months for a closing month of the year that the trade had ever known, except, possibly, December, 1905. Manufacturers and merchants early in the year had order books crowded so full that there was but little necessity to seek business. Orders were given with the greatest freedom, and the only anxiety on the part of buyers was that they could not get the tools they wanted within a reasonable time. Deliveries were the all-important factor in a great proportion of sales during the early portion of the year. Price was only of secondary consideration in the majority of cases, and the dealer or manufacturer who could make the best delivery was generally the recipient of the order.

Manufacturers of practically every class of tools had orders for six to eight months ahead on their books, and deliveries promised were frequently subject to delays of a month or more, owing to the inability to get deliveries of raw and finished materials entering into the construction of tools.

In some sizes and classes of tools deliveries were extended as much as 12 months, and manufacturing plants in every direction were being operated at their utmost capacity during the first half, and in many cases even the third quarter of the year. About midyear, however, the demand for equipment began to fall off. Financial matters developed unsatisfactory features, and the trade began to prepare for a recession, which it was felt was bound to come, and which would be welcomed to a large extent by many tool builders, who had been operating under a heavy pressure during the last two years. That the decline in business was general was felt during the third quarter of the year, when orders for new tools fell off quite materially, but when during the last quarter of the year the acute financial disturbance prevailed, business came to a veritable standstill, and outside of an occasional order for a tool or so, mostly for those of the smaller class, practically no new business was done.

The railroads felt the pressure of unfavorable finances along about midyear and began curtailing expenditures. Announcements made later in the year that no further purchases, except for equipment absolutely needed to keep up repairs would be made, that some of the work under way would be suspended, and that the policies for 1908 would be on a conservative basis, had a very depressing effect on the trade. Curtailment policies adopted by the railroads were soon followed by many of the large industrial plants, and later by manufacturing plants of almost every character. These curtailments were of a varied nature, not only were operating expenses reduced, but orders for tools and equipment were for a time quite freely canceled. Tool builders, with the decline in new business, together with a certain proportion of cancellations, began rapidly to catch up with the work on hand, and before the third quarter had advanced very far, were adopting the same curtailment policies that were being enforced in other directions.

In this territory the financial storm toward the close of the year did not affect tool builders to any particular extent. Failures were few, although collections were extremely hard to make, and in some cases plants were temporarily suspended owing to the fact that sufficient funds to keep them in operation could not be had. Currency was hard to get. Some companies were at times unable to get sufficient to meet payrolls, and payment by check was temporarily employed. This condition, however, did not prevail for any length of time, as the local banks were not affected, and for the most part were able to supply sufficient currency to meet the regular payroll accounts. At the close of the year the financial situation became more settled, but was far from normal, and business continued greatly restricted on this account.

The Export Trade.

Conditions during the greater portion of the year did not favor export business to a greater extent than did those which prevailed during the previous year. Manufacturers of the usually termed standard tools were so far booked ahead on domestic orders that little if any attention was paid to the foreign demand, and when quotations were made, deliveries as a rule were so far extended that there was

little possibility of getting the business. Comparatively speaking, however, the volume of business was good under the circumstances. Makers of special tools and machinery probably did a greater export business than did the regular tool builders. At times there was quite a good demand for some classes of special tools, and builders had export work on their books almost throughout the year. File making machinery, portable tools for railroad shop repair work, as well as portable power driven tools for work of a general nature, all came in for a good share of the export demand. Most of the buying in machine tools for the foreign trade was of an individual character, large equipments being rather scarce in this territory. Power transmission machinery and specialties of this character were again in excellent demand, and manufacturers who have established connections abroad report very fair sales, which were the largest, however, during the early half of the year. Pressed steel shaft hangers and pulley manufacturers report a very good year in the export trade in their particular specialties.

The Machine Tool Trade.

The demand for machine tools was unprecedented during the first half of the year, and even with the decline during the last quarter the volume of business in many lines exceeded that of the previous year. The demand was diversified, and heavy sales of tools of every character were to be noted during the first six months. Deliveries were the important factor in many of the propositions before the trade, and sales in many instances depended almost entirely on the question of delivery. Prospective purchasers were frequently willing to pay a good bonus to get early deliveries, but manufacturers were so fully booked ahead that it was impossible for them to meet demands. As the tools could not be had with any greater degree of promptness from any other source, buyers were compelled to be satisfied with such deliveries as they could get. Some tool builders during the spring covered for their output of certain sizes of tools for the balance of the year, while six months' delivery on others were considered good, and it was not until after midsummer that any material improvement in delivery was to be noted, and then it was confined to but few lines and sizes of tools. The demand throughout the year was general. There was a particularly good demand for milling machines and some makes of lathes, which were consequently hard to get.

Heavy machine tools were bought extensively by the large iron and steel plants, as well as industrial companies. Special tools, however, came in for a large share of business, and even many of the standard tools were fitted with special features to take care of work of a peculiar character. Large propositions in the way of shop equipment were not very numerous, as but few large undertakings were launched in this territory. A number were contemplated but were deferred to some extent by the unfavorable financial situation.

Dealers as a rule had a very successful year. During the first half more business was offered than could be taken care of, owing to their inability to get deliveries of tools from the makers. Stocks on their floors and in warehouses were depleted, and in instances second-hand tools and other substitutions were made to satisfy customers and appease delays. These at times resulted in cancellations of orders, but this caused no particular anxiety on the part of the dealer, as during the first half of the year there was seldom any difficulty in making a resale, in most cases at a higher price, owing to the better delivery that could be made. Along about midsummer, however, this condition began to change, and before the end of the year was completely reversed. Buyers could not be interested in making purchases of tools at any price, owing to the generally changed conditions. Dealers who had placed orders for tools with manufacturers earlier in the year began to receive the tools, and as they were unable to move them, stocks on floors and in warehouses rapidly increased until along toward the close of the year the supply was probably the largest that has been on hand for a number of years.

Second Hand Machine Tools.

Sales of second-hand machine tools were particularly good during the first half of the year, when buyers found it next to impossible to get deliveries on new tools with any degree of promptness. Tools of the heavier class were in especially good demand, and equipment of almost every character was taken early in the year, if for temporary use only, to help purchasers out while waiting for delivery on tools already ordered from manufacturers and dealers. For some months tools of the better class were very scarce, and prices in a number of cases ran up pretty well toward the cost of new tools. Delivery, however, was the main factor, and the price was a secondary consideration. As the demand for new tools began to fall off, and as manufacturers became more and more in a position to make prompt deliveries, the business in second-hand tools began to fall off, and during the third quarter of the year was closer to the normal conditions in that branch of the trade. Later, however, when financial disturbances held up buying in every direction, the second-hand machinery sales fell off largely, and toward the close of the year the demand was very light and buying meager, reflecting the conditions of the trade generally.

Boilers and Engines.

While the business transacted by manufacturers and dealers in boilers and engines throughout the year has been fairly good in the aggregate, this branch of the trade experienced the same active and inactive conditions as were to be found in the various other branches of the trade. The demand was the heaviest during the first half. Buyers of the heavier types of equipment felt the unfavorable financial conditions before midyear. New projects which would require extensive power installations were hard to finance, and a number of the larger propositions were held in abeyance. The medium and smaller class of equipment continued in fairly good demand until the early fall, when there was a sharp decline in the demand. Gas and gasolene engines have been brought more and more to the front during the past year. Gas and oil engines of the higher powers have been substituted for the usual steam boiler and engine to some extent, while the replacement in those of the small horsepowers by gas and gasolene engines was more extensive, and has been a considerable factor in the smaller engine and boiler trade. Boilermakers have had a pretty good year on the whole, and like the engine builders, were uniformly busy throughout the greater portion of the year. During the last quarter the boiler and engine trade was very dull, and will probably not regain normal conditions until the general situation has cleared.

Locomotives.

The builders of locomotives in this territory entered the year with a large volume of orders on their books, sufficient in instances to keep them occupied at full capacity for almost the first half of 1907. As the year advanced the demand became smaller, and before the close of the year plants were being operated with materially reduced forces. In instances railroads did not fully exercise the options taken with builders for 1907 delivery. The railroads were first to feel the effect of the financial situation, and buying was at first curtailed, and then came practically to a standstill, so that orders taken during the last half of the year were few and small at that. At times there was a good export demand, particularly during the last half of the year. The Baldwin Locomotive Works built during 1907 a total of 2663 locomotives, which is the record output for any one year, and exceeds that of 1906 by 53 engines. Of this number, 2371 were steam locomotives and 292 were electric locomotives. Of the former, 363 were for export. What will develop in the locomotive trade in 1908 is problematical. Builders have but few orders on their books at the time, and there is little disposition shown by the railroads to enter the market, so that it is likely that further retrenchments will be made at an early date by the locomotive builders.

Shipbuilding.

The Delaware River shipyards had a prosperous year. Plants were operated pretty fully and the effect of the general depression, except in the holding up of new business, has not been very pronounced. Sixty-two steel and 47 wooden vessels, aggregating nearly 100,000 gross tons, were completed by the shipbuilders, which compares very favorably with other years. Twenty-four steel vessels, including five battleships, three torpedo boat destroyers, two steamships, one steamboat, two revenue cutters, three steam tugs and eight lighthouse tenders, as well as three wooden vessels, are in course of construction at various yards. During the last half of the year the demand for vessels of almost every character declined, and although there has been considerable figuring done by the builders, but few orders of any consequence were placed, owing largely to the financial situation during the last quarter of the year.

Prices.

Prices of machinery and tools showed advancing tendencies during the first half of the year, and advances varying from 5 to 10 per cent., and in a few instances more were announced as cost of manufacture increased. The cost of practically all materials increased and the continual rush of work, overtime, &c., made the cost of labor proportionately higher. Higher prices, however, seemed to act as no check on buying; in fact, in a great number of cases they were of secondary consideration, delivery being the important feature of the first six months' transactions. Premiums were offered in many cases for prompt delivery, but unfortunately builders of tools, as well as dealers, were frequently not in shape to benefit by this, owing to inability to make the delivery required. When business began to fall off prices in some grades of tools weakened perceptibly. On others, however, and principally those of the higher grades, prices were firmly maintained at all times during the year.

Iron and Steel Foundries.

The iron and steel foundries in this territory have had much the same experience as have the tool builders and other industrial plants. They entered the year with an exceedingly large number of orders on their books, and for six or eight months record tonnages were the order of the day. As the machine tool and general trade began to fall off, foundries found buying less urgent, and during the latter portion of the year orders were scarce, and as far as those

for future delivery were concerned, almost impossible to get. Business during the last quarter was largely of a hand-to-mouth character, and plants ran irregularly, and at times on short time only. Owing to the scarcity of raw materials deliveries during the first half of the year were somewhat unsatisfactory. During the last half prompt shipments could be had in almost every case. Prices of castings were high early in the year, owing to the scarcity and high price of raw materials, as well as the scarcity of skilled workmen. When conditions became easier, however, buyers could not be interested in placing orders for any quantity, and when prices of raw materials declined and finances became unsettled, purchasers in many instances could not be interested in contracting for future requirements at any price.

In view of the exceedingly good demand for steel castings, several of the foundries in this territory increased the capacities of their plants. Several new plants were started, while preparations for the building of several others were made—notably those of the Tropenas Steel Company and the Deemer Steel Casting Company at New Castle, Del. The Keystone Steel Casting Company, Chester, Pa., was one of the new plants which went into operation during the year.

Improvements to Plants.

Notwithstanding the great volume of business that was coming out early in the year, and the apparent inability on the part of tool builders to take care of the business offered, there was little disposition to extend plants to meet the urgent need. Manufacturers had had their lesson in this respect several years ago, and the conservative policy prevailed, it being pretty generally believed that the tremendous demand for tools and equipment could not continue, and after the experience of keeping greatly increased plants in operation in dull periods, it was thought by many to be better to take care of as much business as possible with the present facilities rather than to increase capacities to any material extent. Nevertheless, a number of good sized projects in the way of plant extensions and extensions to equipment came before the trade.

The city of Philadelphia has itself been a very extensive buyer of equipment for the completion and extension of its filtration plants, in connection with the water supply, and has outlined some very large expenditures for various equipment during the coming year. One of the great projects in which the city has been jointly interested with the Pennsylvania and Philadelphia & Reading railroads has been the elevation of the surface tracks of these roads in some sections of the city. This matter has been agitated for years, and was finally arranged during 1907, and contracts for part of the work have already been given out.

The Standard Cast Iron Pipe & Foundry Company, which was formed in 1906, began operations at Bristol, Pa., during the year on what promises to be one of the largest pipe manufacturing plants in this country. While not fully completed ,a large amount of the work of building has been done, and some of the equipment installed.

The Bethlehem Steel Company was also a very extensive buyer of equipment during 1907, particularly for its new Saucon plant, which is now approaching completion and expected to be in operation during the coming month.

The Standard Roller Bearing Company greatly extended its plant during the past year. It purchased the large plant of the Pennsylvania Iron Works Company adjoining, and altered and extended it to meet its requirements. The latter company after the sale removing to Eddystone, Pa., where it in turn erected a new plant.

The automobile industry has been of particular interest to the trade in this territory, and several plants were built and equipped during the past year, while a good volume of business developed from garages, a number of which were built, and some of which have extensive repair shops.

The Outlook for 1908.

To give any clear outline of the probabilities of business during 1908 in the machinery trade is indeed a difficult proposition. Future developments are dependent entirely on conditions, and these themselves are so complex that they can scarcely be analyzed with any degree of satisfaction. The general opinion, however, is that the year will not be a very active one. Manufacturing concerns are carrying but a small proportion of work over into the year, and new business has been extremely small. Inquiries are light, compared with those during the greater portion of last year, and although somewhat better at the close of the year than early in December, they are confined to small propositions. Prospective buyers appear to be in no hurry to place orders, and until the financial situation becomes more satisfactory it is scarcely probable that any great volume of business will come out. Restoration of confidence is a slow process at any time, particularly during a Presidential year, so that it is more than likely that very conservative policies will prevail, at least until after the Presidential nominations have been made. There is no doubt, however, that a fair volume of business will develop from time to time, particularly along the line of the smaller propositions. There is an encouraging amount of business in sight, and in many cases it is believed that along about February 1, after inventories have been cleaned up, a moderate quantity of orders will develop. Manufacturers as a rule will be satisfied if enough business comes along to keep them in position to run their plants regularly at normal capacity, which is more than the majority can do at the present time. Under the circumstances, therefore, it will be necessary to await further developments generally before any concise statement as to the future can be made.

Chicago Machinery Market.

CHICAGO, ILL., January 7, 1908.

It is too soon after the holiday interim to expect any positive change in the situation. That the development of a stronger trade movement is generally anticipated is evident from the optimism and better feeling prevailing in the market. A fair run of inquiries, coming mainly from the smaller manufacturing interests throughout the West, is reported for the past week among machine tool dealers. No large installations are included in these inquiries, they being mainly comprised of single tools or small lots for replacements or additional equipment in existing plants. Dealers have for some time been gradually reducing their stocks of second-hand tools, which in the meantime have been but sparingly replenished on account of the stiff prices at which such machines are still held. Now that new tools of standard make and pattern can be furnished promptly from stock there is less demand for inferior second-hand machines such as, during the period of congestion last year, were sold at relatively high prices. Good second-hand tools are, however, moved as readily as new ones, and dealers are now in position to add to their stocks when satisfactory prices are offered. Among the moderate number of sales made during the week were included a few tools bought by the Santa Fé and the Chicago, Indiana & Southern railroads. While it is hardly expected that the railroads will enter the market as active buyers immediately, there are indications pointing to a fair amount of business from these sources not far hence.

Touching the future of the machinery market in general, the opinion of W. H. Whiteside, president of the Allis-Chalmers Company, Milwaukee, expressed in a recent interview, is of interest, because of the extended range of the company's operations and the opportunities for observation they afford: "It is daily becoming more apparent," said Mr. Whiteside, "that the general business of the country has not been so seriously injured by the recent sudden financial depression as the public has been inclined to believe. And I am firmly of the opinion that the thing now most necessary is to loosen the chains of conservatism and give courage an opportunity to assert itself and make advances consistent with the general prosperous conditions and well distributed resources of the country. As the production and use of basic machinery, such as prime movers for the generation of power, is a very potent and a leading factor in our commercial activities, very naturally it is one of the first lines of business to be affected when the pendulum swings from optimism to pessimism; and likewise the first to feel the effect when the change in sentiment again manifests itself. The number and character of inquiries which our offices located in the principal commercial centers of the country have recently been receiving convincingly demonstrate a return of confidence, and bear evidence that not only a diversified, but a large volume of business will be offering ere the middle of the first quarter of 1908 has been passed. The railroads of the country, whose policy of retrenchment has continued for approximately a year, notwithstanding the largest offerings of traffic, with resultant increased earnings, in their entire history, must shortly be compelled to again enter the market and make large expenditures for renewals, including train equipment, steel rails and general supplies. This, coupled with the approaching need for the renewal of stocks of metal employed in all branches of industry, which, through shutdowns of furnaces and smelters and the continued use of iron, steel and copper for current consumption, have now been lowered very near to the minimum, and giving due consideration to the large balance now in our favor in our commerce with foreign nations, and to the well distributed revenues from our exceptionally large agricultural products, cannot fail to create an early demand for new machinery and auxiliary equipment. The outlook is, therefore, distinctly encouraging."

Of the numerous light and power projects in contemplation throughout the West, quite a number are ready to go forward as soon as financial conditions make funds available. One of these now under way is the Southwestern Light & Power Company, Sallisaw, Okla., which has been incorporated with a capital stock of $25,000. The company is specially desirous of securing information on ice plants

and gas producers, and solicits catalogues and correspondence relative to such apparatus. The incorporators are W. A. Loudon and W. W. Ray.

The Dake-American Steam Turbine Company, Grand Rapids, Mich., which was formed two years ago, has been incorporated with a capital stock of $200,000, and will enlarge its plant for the manufacture and sale of an elastic fluid turbine patented by Charles W. Dake. The incorporators are Richard G. Peters, president; Frank M. Byam, secretary and treasurer; Charles W. Dake, William Donker and Herbert B. Gillette.

The securing of a site at West Adams and Desplaines streets on a long term lease by the Monarch Electric & Wire Company, Chicago, foreshadows the construction of a large manufacturing building, which will eventually be erected at that location. While it is probable that work on this building will not actively be begun during the present year, plans will doubtless be developed within the next few months for the factory and its equipment, which will be adapted to the manufacture of high grade electrical necessities, including weather proof copper and iron wire, annunciator wire, &c.

Cincinnati Machinery Market.

CINCINNATI, OHIO, January 7, 1908.

As Monday, January 6, of the new year was tacitly understood to mark a sort of crisis in the machinery and machine tool manufacturing world—that is, the shop centers of industry—the representative of *The Iron Age* made a canvass of the larger establishments on that morning to determine the status of the situation. So far as the inquiry was extended no idle plants were found, and investigation of those that had been shut down during the holiday season and prior to that—some two or three only—disclosed that they have resumed operations. One of the largest of the tool manufacturing concerns which has been shut down for two weeks started up again on Monday morning with 325 men. The mails of the morning brought enough generally interesting information to induce this statement from the official in charge: "We had a nice lot of inquiries and orders this morning. Two small orders came from abroad, and all in all the results are sufficient to warrant the statement that it was the most satisfactory mail we have had for two months. We do not look for anything big or wonderful, but believe that the situation will steadily improve."

There is some talk of possibilities of price cutting in the tool trade, but the manufacturers in this section are apparently maintaining lists, and rumors when run down result usually in finding that they emanate from some enthusiastic purchasing agent who has been working on the sales agents. A large tool manufacturer here was called by long distance telephone a few days ago by one of his interior sales agents and told that a prominent purchasing agent wanted to buy some machines, and stated that he "could make the sale if he could cut the price"; that another representative of Cincinnati concerns had made a certain offer. The manufacturer held firm and told the agent to let the parties buy the machines at a cut price if they could. When this firm finally got the order, and at the asked price, this manufacturer reasoned that there was no cutting being done or else he certainly would have lost the order. Whether this satisfactory condition of things will continue to rule when the buying movement finally strikes the overstocked selling forces remains to be seen.

The Cincinnati Southern Railroad (Queen & Crescent) is in the market for a small list of tools for immediate delivery. The list includes one lathe, one shaper, one drill press, one sensitive drill and one planer. The tools are for installation in the shops at Ludlow, Ky.

One of the largest of the early year improvements, which has in no wise been modified because of the recent stringency, is the building of the Heekin Can Company, to be erected at Sixth and Culvert streets. Samuel Hannaford's Sons, architects, will have charge of the building and will be ready for bids in about a week for power equipment which will include four boilers of 250 hp. capacity, six electric elevators, two large direct connected units for operating the factory, and a lot of individual motors. The architects will ask for about a six months' delivery on this equipment. The company will manufacture cans for spices, teas, drugs and similar lines and will be one of the largest in the country.

From the large list of tool manufacturers seen and interviewed it is possible to make the statement that while pessimism may play no part in the new year business equipment of the manufacturers in this section, the business going and in immediate prospect is not more than 20 or 25 per cent. of what would be considered normal from the experience of the past year. One of the shaper manufacturers is still working on back orders that escaped cancellation. A tool concern that has been shut down for two weeks, and started up on Monday morning with half force and on 35 hr. per week time, reports that foreign inquiries have been heavier during the last month than domestic.

The foundries are still working with greatly reduced forces, and the melt is very much off; in some cases being one-fifth of the normal capacity.

Dealers all have plenty of tools on their floors and in warehouses, and announce ability to make immediate delivery on practically all the medium and smaller lines of tools. There is little doing among the second-hand dealers. Such business as is going is of an insignificant character.

Earl H. Turner of the legal firm of Gotschall & Turner, Dayton, Ohio, has been named receiver for the Nutting Machine Company of that city. It is claimed that the assets are in excess of the liabilities, and that it will easily pay all, the financial depression and need of ready money being responsible for the failure.

It is claimed that the Implement Mfg. Company, Marion, Ohio, which recently applied for a receiver, is in excellent shape, and the business will be continued and enlarged. The death of the president, Henry A. Martin, who was also general manager, left the corporation in such shape that it was found necessary to reorganize.

The Toledo & Ohio Central Railroad has just finished one of the largest shop buildings on the Hocking Valley-Ohio Central System. It is located in Bucyrus, Ohio, and is to be used for general repair work on freight cars. It has ground dimensions of 90 x 400 ft.

The Lake Shore Railroad has purchased a plot of land at Elkhart, Ind., on which to build a new locomotive shop. About 25 acres is in the tract. The matter of building, it is understood, will depend upon business conditions, which, if favorable, will see work commenced soon. Estimates of cost have been prepared.

New England Machinery Market.

WORCESTER, MASS., January 7, 1908.

No change of any importance has developed in the situation affecting the machinery trade. A few orders are being booked by the dealers, and some of the machine tool builders report new business, indicating a degree of improvement, which is slightly accentuated by inquiries promising increased business later in the month. As little was expected in the way of business during the first week of the new year, no discouragement is in evidence, and the trade continues hopeful of a return to a fair demand a little later.

Instances of decreases in wages in the metal industry are becoming more numerous. In those cases where employees resent a cut-down their places are quickly filled. There is no scarcity of good workmen out of employment who are willing to accept less than the rate of wages which has been prevailing. The more intelligent workmen who are untrammeled by union affiliations accept the situation philosophically, knowing that a decrease in wages must be inevitable under the greatly changed industrial conditions. The changes apply to contract and piece work as well as to hourly wages.

The daily newspaper accounts of the renewal of active manufacturing after the shutdown over the holidays are occasionally exaggerated in the number of hours to be operated and the number of men employed. But on the whole, including the metal lines other than machine tools, production has increased in New England. The machine tool trade and its kindred lines are hit hardest of all, naturally. Manufacturing for stock is increasing, and when the demand revives there will be an abundance of machinery for immediate delivery. Among the large concerns that are stocking up in anticipation of a future demand is the Pratt & Whitney Company, Hartford, Conn., which has started up after a 10 days' shutdown on a 50-hr. schedule, and with a force of men reduced only as less skillful workmen have been released.

W. & B. Douglas, Middletown, Conn., pump manufacturers, are building an addition to their plant, of mill construction, 24 x 40 ft., which will eventually be enlarged to 40 x 80 ft. The new room will be used for the assembling department and for storage.

The R. H. Long Machinery Company, South Framingham, Mass., has been incorporated under Massachusetts laws to manufacture shoe machinery, needles, eyelets, &c., used in the manufacture of shoes. The capital stock is $200,000, of which $150,000 will be paid in in cash and the balance in the good will and property of the Framingham Shoe Company so far as they relate to machinery. R. H. Long is the principal owner of the business, subscribing to all but three of the 2000 shares. The company is a result of the successful contest waged against the United Shoe Machinery Company, last winter, in the effort to make illegal the practice of leasing shoe machinery on the condition only that machinery of other makes be not used in a factory. The South Framingham business has been carried on for some time, but on rather an experimental basis. The new company is not ready to announce its plans, but it

may be taken for granted that the considerable access of new capital means the intention of proceeding with the manufacture of shoe machinery on a larger scale, and if this proves to be the case new equipment will be required. R. H. Long is about completing the erection of a large factory building, of reinforced concrete, at South Framingham, on the line of the Boston & Albany Railroad. It may be decided to utilize this building, or a part of it, for the shoe machinery business, but Mr. Long states that this has not yet been determined. Charles F. Pooler is the president of the new company; Richard H. Long, treasurer; George G. Whittemore, Framingham, clerk, these officers and Stephen S. Taft, Jr., Springfield, Mass., constituting the Board of Directors.

The John L. Parker Company, Worcester, Mass., manufacturer of pressed metal goods, has added a department for the manufacture of screw machine specialties. The company has installed two National Acme machines, a Warner & Swazey and a Pratt & Whitney, and proposes to purchase additional machine screw equipment in the near future. Thomas E. Griffin, recently with the American Roller Bearing Company, South Framingham, and formerly with the Locomobile Company of America, is the head of this new department.

The Boston & Maine Railroad is planning to take care of immediate demands upon its locomotive repair department by increasing the capacity of its shops at Concord and Keene, N. H.; by building an addition to its engine house at Somerville, and by the installation of new machinery in that portion of the shops at East Cambridge, Mass., which was not destroyed by the recent fire that burned the machine and boiler shops. New tools will be added at Concord and Keene and at East Cambridge, and the new shop space at Somerville will, of course, require equipment. The East Cambridge fire converted the machinery into junk. It is stated that the proposed improvements will take care of the repairs of the system until the great shops planned to be erected at East Somerville are built, involving an eventual expenditure of $2,000,000.

The Prentice Bros. Company, Worcester, Mass., manufacturer of upright drills, radials and engine lathes, has taken a new five years' lease of the buildings occupied by the business.

The proposed improvements on the Connecticut River between Hartford, Conn., and Springfield, Mass., which would have made the river navigable for boats of some size, must be abandoned for the present at least. Congress made $1,500,000 available for the purpose, on the condition that no damages be claimed for loss of private rights. The Connecticut River Company, which operates a dam, locks and water power at Windsor Locks, declines to accede to such an agreement, demanding $2,000,000 for its rights, which, naturally, put a stop to the whole undertaking. A considerable manufacturing community is located at Windsor Locks, the plants being dependent for their power upon the canal and locks which furnish water from the river.

The Bigelow Carpet Company, Clinton, Mass., is planning to erect a new power plant in the spring, with the purpose of lighting and heating the entire great plant from this central station. A large addition to the weaving mill will also be built this year.

The first apprentice to receive the diploma of the National Machine Tool Builders' Association ended his course at the works of the Norton Grinding Company, Worcester, Mass., January 6, there being informal exercises to commemorate the event. The diploma, recently adopted by the association, is a handsome piece of work on parchment paper and bears the signature of Frederick L. Eberhardt and Secretary Paul E. Montanus of the association, as well as those of officers of the Norton Grinding Company. The presentation was a little in advance of time because of the departure for Europe this week of Charles H. Norton, superintendent and mechanical engineer of the company.

Government Purchases.

WASHINGTON, D. C., January 7, 1908.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until January 28 for the following machine tools for the New York and Washington navy yards: One flat turret lathe, one motor driven punching and shearing machine, one horizontal punching machine, two milling machines, two bolt heading, upsetting and forging machines, one 72-in. planer, one duplex hydraulic pump, one plate bending rolls and one 10-in. slotter.

The Isthmian Canal Commission will receive bids until January 27, circular No. 413, for rock drills, upright drill presses and other supplies.

The following bids were opened December 26 for an engine lathe, etc., for the Norfolk Navy Yard:

Class 167, one engine lathe, one lathe chuck, one grinder head and one head shaper—Bidder 22, Baird Machinery Company, Pittsburgh, $518.50; 78, Fairbanks Company, Baltimore, Md., $505.33; 81, Frevert Machinery Company, New York, $418 and $459; 87, Garvin Machine Company, New York, $534; 102, Hendey Machine Company, Torrington, Conn., $450, part; 103, Hill-Clarke & Company, Boston, $142.50, part; 136, Manning, Maxwell & Moore, New York, $577.75 and $452.75; 150, Niles-Bement-Pond Company, New York, $524; 193, Smith-Courtney Company, Richmond, Va., $568.40.

Under opening of November 4, circular No. 396, for supplies for the Isthmian Canal Commission, all bids have been rejected and new bids will be asked at a later date. This circular included class 2, two punching and shearng machines, and class 3, one horizontal punching machine.

The Babcock & Wilcox Company, New York, has been awarded contract for one steam boiler for the Key West Barracks, Fla., at $3345, bids for which were opened November 12.

The following awards have been made for machinery for the navy yards, bids for which were opened December 17:

Westinghouse Electric & Mfg. Company, Pittsburgh, class 1, five induction motors, $1943.

Niles-Bement-Pond Company, New York, class 2, one universal radial drill, $2255.

Western Electric Company, New York, class 3, two double emery grinders, $325.

Frevert Machinery Company, New York, class 4, one band saw, $764.

The Interstate Commerce Commission Urges More Legislation.

WASHINGTON, D. C., January 7, 1908.—The annual report of the Interstate Commerce Commission, just made public, discusses some important topics to which the attention of Congress is invited as subjects for legislation, among them being the desirability of clothing the commission with power to restrain advances in rates by common carriers and how to check the great destruction of life in railroad accidents. Concerning the propriety of authorizing the commission to restrain advances in rates pending proceedings, the report says in part:

Under the operation of the Interstate Commerce Act, the right to initiate interstate rates rests entirely with the railroad, which may, by giving 30 days' notice, put into effect any rate or any regulation or practice affecting a rate which it sees fit. The commission is not required to approve these rates and has no authority whatever to condemn them. It can only act upon a rate so established by the railroad in case a formal complaint is filed attacking that rate and after a full hearing.

It is certainly just that carriers should not be required to reduce their transportation charges, nor to alter their rules or practices affecting such charges, without opportunity to be heard upon their part, for these charges are, in essence, the property of the railroad. It seems, therefore, ordinarily a just provision to require that formal notice shall be given the railroad, with opportunity to justify its rate, before a reduction is ordered. When, however, the carrier advances a rate or so changes a regulation or practice as to impose upon the shipping public a higher charge or some more onerous condition, an entirely different question is presented. Assuming that the advanced rate would be perfectly just in the end, it may nevertheless be entirely unjust to suffer it to go into effect at the time named by the carriers.

In the majority of instances, perhaps, advances may properly be made before the reasonableness of the advanced rate has been finally passed upon by this commission; but there are also many instances where great injustice must result unless matters can be kept in *statu quo* while proceedings are pending to test the reasonableness of the advance. Where a rate has been maintained for a considerable time, and where business interests will be seriously affected by its change, it is no undue hardship to require the carrier to continue that rate in effect until the propriety of the advance can be passed upon, and to finally make the advance itself at such time as will work no unnecessary injury. Certainly there ought to be some tribunal to which shippers can appeal, with authority, if such a course seems just, to prohibit the advance or the change until the general question can be considered.

We suggest that when an advance in rates or a change in any regulation or practice is attacked by complaint to this commission, the commission shall have the power, in its discretion, after notice to and hearing of the parties, to prohibit the taking effect of the advance or change until the matter has been finally heard and determined. At all events, Congress should definitely understand that we, under the present law, are powerless to act in reference to these advances except upon the filing of a formal complaint and after a full hearing of the case.

In discussing the disastrous railroad accidents of the past few years the commission submits a report showing that during the fiscal year 1907 5000 persons were killed and 76,286 injured, an increase of about 17 per cent. as compared with 1906 and 33 per cent. as compared with 1905 and 1904. With a view to reducing this terrible loss of life the commission strongly recommends prompt legislation for the enforcement of the use of the block system on all railroads doing an interstate business. W. L. C.

OBITUARY.

GEORGE HUNTINGTON REYNOLDS, well known as an inventor, died, January 3, at Mansfield, Conn., his birthplace, aged 78 years. His early life was one of hard work, for he became self-supporting as a farmer's boy. He was afterward a spinner, but his bent toward engineering was a strong one. His first work to attract notice was a steam engine exhibited in 1856 at the American Institute Fair, New York. He received a gold medal and the next year was made superintendent of the fair. In 1859 he became chief draftsman for the Delamater Iron Works and three years later was made superintendent and general manager of the Mystic Iron Works, established to build ships and engines during the Civil War. Returning to the Delamater Works as superintendent after the war, he remained until 1884, when he took a similar position with the Crane Elevator Company, Chicago, and from that time was responsible for much of the development of the passenger elevator. He was then employed as consulting engineer by the Pneumatic Dynamite Gun Company of New York, and superintended the installation of the battery of the dynamite cruiser Vesuvius. He afterward was a consulting engineer of the Locomobile Company of America. He leaves two sons, one of them being Irving H. Reynolds, formerly chief engineer of the Allis-Chalmers Company, and now of the William Tod Company, Youngstown, Ohio. Edwin Reynolds, the famous engineer of Milwaukee, is his brother.

ALEXANDER W. SLOCUM died, December 31, at his home in Pittsburgh, aged 44 years. He was born in Washington county, N. Y., and was educated in the public schools of New York City. He afterward entered Columbia University and won a prize scholarship when only 15 years old. After he graduated he was connected with a number of car wheel concerns in this country and in Europe. In 1896 he went to Budapest, Hungary, and also Leobras, Germany, to superintend the erection and starting of car wheel plants at those places. He was largely instrumental in organizing and developing the Pennsylvania Car Wheel Company at McKees Rocks, Pittsburgh, which was later absorbed by the Schoen Pressed Steel Car Company. He was also one of the projectors of the Keystone Car Wheel Company, which later became the National Car Wheel Company of Pittsburgh. In 1906 he made a contract with the Dixon Car Wheel Company, Houston, Texas, to build and put in operation a car wheel foundry in Houston, and this he completed about 60 days ago. He was a member and former president of the Pittsburgh Foundrymen's Association, and was also a member of the Pittsburgh Club, the Engineers' Society of Western Pennsylvania and the Thalia Club of Houston, Texas. He leaves a widow.

ISAAC REESE, a former iron manufacturer, but in more recent years connected with the firebrick industry, died, January 1, at his home in Pittsburgh, aged 87 years. He was born in Wales and came with his parents to America. As a lad he assisted his father in making the first bloom in a sand-bottomed furnace as applied to puddling in the United States. This was in Bellefonte, Pa. When 16 years of age he went to Pittsburgh and began work as hammerman. After this he became a partner in blast furnace construction in Clarion county and later a member of the firm of Johnson, Taylor & Co., in the manufacture of firebrick. He discovered a new clay and by a process made better brick known as the Woodland. This was a firebrick for crucible furnaces. Three years after entering the firm he purchased all other interests of the concern and controlled it 14 years. Later he invented the famous Reese silica brick, which stands a test of 5000 degrees and is used in open hearth furnaces. He established other plants and has practically had exclusive control of the output of fireclay brick for crucible furnace building in Pittsburgh and vicinity. In 1896 he took his sons into partnership, the firm being known as Isaac Reese & Sons, and later as Isaac Reese & Sons Company, and with offices in the Lewis Building, Pittsburgh. In 1900 the business was incorporated under the latter name, Mr. Reese being president and general manager. Two years later the firm entered the consolidation known as the Harbison-Walker Refractories Company, but still retained the firm name and has always had its own offices, being the only firm in this combine of 30 plants to retain its own individuality. He is survived by his sons, George of Kittanning, and Walter L. of Pittsburgh, and two daughters.

WILSON H. FAIRBANK, Warren, Mass., president of the Warren Steam Pump Company, died January 5, aged 71 years. He was a native of Warren, and as a young man was associated with his father in the lumber business. The chief business of his life was that of contracting for telegraph poles for the great telegraph and railroad companies. He served in the Massachusetts House of Representatives and Senate and as a member of the Governor's Council, and represented his State as a commissioner at the St. Louis, Lewis and Clark, and Jamestown expositions.

STEWART F. CHISHOLM, formerly of Cleveland, Ohio, and a director in the Union Steel Screw Company of that city, died at Princeton, N. J., December 27, aged 57 years. He was a son of William Chisholm, Sr., of Cleveland.

Labor Notes.

The readjustment of the wage scale for salaried men at the Bessemer steel plant of the Republic Iron & Steel Company, Youngstown, Ohio, has been made, and those who formerly received a stipulated salary and a percentage over a certain tonnage per month will hereafter be paid strictly upon a tonnage basis. It is stated that under normal conditions the earnings of the men will be fully as large as heretofore.

The McClintic-Marshall Construction Company, January 4, began to distribute extra compensation to the workmen in its Pittsburgh plant in pursuance of a new profit sharing plan. The scheme is that when the shops push their output beyond a certain fair limit for a day's work, the workmen employed there shall receive a bonus for every 100 tons production.

Owing to the installation of improved machinery for manipulating the material about the blooming mills, the Jones & Laughlin Steel Company, Pittsburgh, intends to operate them hereafter on a 12-hr. schedule. Heretofore these mills have been operating on an eight-hour basis, which necessitated three crews of workmen for the 24 hr. The new practice does away with one crew of men and permits a reduction in wages paid per ton of output. This reduction in wages is compensated for by the increased tonnage these mills are expected to produce with the new apparatus, and thus a satisfactory adjustment in a scale of wages is accomplished.

The open hearth furnaces at the Lackawanna Steel Company's plant at Buffalo will go back into service the latter part of this week, and a merchant mill and some other finishing equipment will also be placed in operation as soon as the open hearth furnaces get to turning out steel. Plans are being made for resumption in the Bessemer division, and it is hoped that the entire plant will be running early in February.

Both furnaces of the United Iron & Steel Company, Pittsburgh, are out of blast. Fannie Furnace at West Middlesex, which was running on Bessemer iron, blew out December 10, and Leetonia at Leetonia, Ohio, which was running on foundry iron, blew out December 31.

For the past year or so paper making in Japan has been very active. Old companies have enlarged and new ones have been formed. Steam for motive power is used in most Japanese mills, and nearly all of the machinery used is of American make.

The Bethlehem Steel Company has removed its Philadelphia offices from 1518 Pennsylvania Building to 811 in the same building.

Of the world's supply of India rubber 63 per cent. is estimated to be furnished by South America.

HARDWARE

IN connection with the organization and work of the various State associations a grave responsibility rests upon the committees, whether designated as legislative or by some other name, who are charged with formulating the judgment of the association in regard to legislation. They should be made up of the ablest and most broad-minded men in the organization, men who will be able to look at all sides of the subjects presented to them and who will refuse to recommend, as has sometimes been done, ill-considered and even mischievous measures. They should be able to withhold approval of resolutions no matter how popular, even though presented and urged by enthusiastic and prominent members of the association, if in their judgment the resolutions are based on wrong principles or the contemplated action is for any reason unwise. They must remember that a meeting crowded with business and called upon to consider some matters of unquestioned practical importance and many others involving much detail, is not likely to be characterized by the care and deliberation which are necessary in forming a judgment in regard to legislation which will be equitable and beneficial in view of all the interests affected. Such committee should be able to pass intelligently on the various commercial questions which come before it, should possess something of a judicial spirit and have strength to resist pressure in favor of unnecessary and unreasonable projects.

There are many questions which relate so closely to commercial matters that intelligent merchants should take an interest in them, and form opinions in regard to the legislative action which should be taken. Thus, for example, there is in some States reason for modifying the lien, garnishee, exemption and other laws enacted or needing to be enacted for the protection of merchants and others to whom money is due. Merchants in convention assembled can very properly express by resolution their attitude on such questions, and thus do their part in securing the passage of equitable laws to meet the case. Local or State regulation of itinerant merchants or peddlers is also a matter to which some of the associations have given attention, finding reason for memorializing their legislatures with a view to securing protection not only for the regular distributers, but also for the public against the imposition to which they are often subjected by these roving vendors. Another class of legislation to which the associations in some States have given a good deal of attention is represented by the laws in regard to pure Paint, prescribing its composition, the kind of label to be used, conditions of sale, &c. A similar principle might obviously be applied to a multitude of other commodities if it were deemed advisable, for it is difficult to find any logical stopping place if the attempt is made to protect the public in the matter of quality. This is, therefore, a class of enactment which should be regarded with some suspicion, as there is great danger that foolish and impracticable measures will thus receive indorsement. Postal matters, so far as they bear directly upon the business of the merchant are an eminently proper subject for consideration, and in regard to which resolutions expressing the association's opinion are in order.

It may indeed be assumed that every Hardware Convention this season will pass resolutions in regard to parcels post, a matter which is sure to be a prominent subject of consideration. While there is a substantially unanimous opinion in opposition to the passing of laws which will permit the carriage of merchandise through the mails to any considerable extent, it is desirable that anything looking like a cut and dried treatment of the subject should be avoided. For this reason each convention should get up its own resolutions rather than follow any set form. Such expressions on the part of merchants so intelligent and influential as those identified with the Hardware trade will unquestionably have weight with Congress, and tend to discourage the passage of any of the laws proposed for the establishment of a merchandise post. Without referring at this time to the great questions which are commanding the attention of all thinking men in regard, for example, to such matters as the national finances, the control of corporations, the regulation of the railroads and the Governmental direction or operation of public utilities, there are other matters in which the retail merchants of the country are peculiarly interested which will naturally suggest themselves to our readers as proper subjects for recommendations of legislative action. The importance of having the committees in charge of this department of association work made up of broad minded and able men, endowed with something of a judicial spirit, is thus enforced.

Condition of Trade.

The activities of merchants and manufacturers continue to be devoted largely to the closing up of accounts, to ascertaining the results of the business of the past year, and in a general way getting ready for the opening season. In a time like the present, when it is especially desirable to know definitely how the business is doing, not only as a whole, but in its various departments, the importance of having a good system of accounting is brought home with peculiar force. Books and balance sheets are accordingly studied with especial care. Much attention is also given to a consideration of the general business situation, and the indications of improvement which in one way or another are apparent, so as to be able to form an intelligent judgment in regard to the policy to be pursued. A cautious and conservative spirit is evident, and merchants and manufacturers are generally endeavoring to pursue a safe rather than an aggressive course. While there is a general clearing of the financial skies and things are looking decidedly brighter, there is a good deal of scrutinizing of credits and a looking into the question whether or not much trouble, such as frequently accompanies or follows monetary disturbance, is to be expected from the failure of commercial houses. The general impression seems to be that the Hardware trade is sound and that not much is to be apprehended in the way of financial embarrassment. While these questions are under advisement there is naturally comparatively little placing of orders, especially as the trade are waiting to see if reductions in price are to be at all general. Thus far the manufacturers are for the most part following a conservative course, and like their customers, waiting to see how things are going before committing themselves by an announcement of revised prices. There are concessions being made here and there, but in general, quotations are well maintained. The disposition

of the manufacturers to work together so far as this is feasible, is a feature which promises well for a reasonable stability in the market. As giving an admirable review of the situation we append the following letter from our special correspondents in St. Paul, which was received too late for our last issue:

FARWELL, OZMUN, KIRK & Co.—Taking of inventories and preparations for the new year are now the work in hand, and will be for some days ahead; 1907, with all its promises, its successes and defeats, its realizations and its disappointments, has come and gone. Upon the whole it has dealt kindly with the commercial houses, and while its path has not been smooth or always strewn with roses, it has offered some mitigating and perhaps even compensating advantages.

The year came in with some lowering clouds, which, however, it was hoped were too far distant to break upon us during the year. But the storm came and the last half of the year was not an easy time for the conduct of business. Throughout this period, however, there were so many elements of strength in the situation that the great body of business men over the entire country never lost their implicit faith in the outcome. Prosperous conditions prevailed in nearly all parts of the country.

There was, to some extent, it is true, an over use of credits for the time, owing to the unusual activity of business generally, but this abnormal feature could be depended on to cure itself in time. Farmers were fairly prosperous, perhaps seldom or never more so, and so were the lumbering and mining and other large interests. The railways, while not crowded with business, as in 1906, were still busy, and all lines of business were much the same.

Resting on this foundation and believing that there was little of a speculative or fictitious character in the legitimate and regular business interests of the country the commercial houses went straight ahead, and they have come through the ordeal in a way that is not only creditable and advantageous to them personally but that must also command the approval and admiration of thoughtful men. It is very remarkable that during this long period of stringency there have been so few failures. So far as the writer knows, not a single Hardware house, of any prominence, has been crippled, or has been obliged to go into port for repairs. We also believe this to be the condition substantially of other lines of trade, which certainly shows in a very favorable light both the character of the men at the head of the houses and also the condition of the houses themselves.

Better days are now probably at hand, and if these many ships of commerce can sail into the smoother seas ahead with as good a record as they have thus far made, they will richly deserve the success in store for them and their part in the commercial history of the country will read well in the future.

There are many lessons to be found in such a school of experience as this. We now mention only one—the most important one of all at this time to the business interests of the country—that of a practical, safe, flexible currency. Are the business interests of the country willing to go into the strain of another fall's experience without some better provision for the necessary addition to the currency for moving the crops?

All these years we have been waiting for the banks to agree on some plan. But bankers have their individual pet schemes and do not agree. Besides, bankers are not interested in the same way as are merchants, manufacturers and others. In an ordinary stringency the banker simply gets higher rates of interest and the merchant and manufacturer pay them.

But of all things that the banker dreads a panic is easily the first, and the danger of a stringency running into a panic at some time is always before him, and thus the banks are interested in the common cause. But the time has now come when the men who have carried a large part of this unnecessary burden should demand relief from Congress.

There should be a strong committee now at work on it—such a committee as served on the monetary commission years ago. The value of such a committee in advising with bankers and members of Congress and also in the effect their recommendations would have on the public would be large. There is little or no danger of unsafe legislation on this subject. It is safeguarded by so many connected interests as to put aside any fear of this danger. What is wanted now is action!

Chicago.

Trade movements are still eddying in the aftermath of holiday diversions, and have not yet got straightened out in their course. It will take a week or two to get inventory work wholly out of the way and business running smoothly in its accustomed channels. By that time there should be some indication of the attitude of buyers respecting the placing of orders for both present and future requirements. The most optimistic are not looking for the development of an unusual volume of business, but there is a widespread conviction that provision so far made will be found short, rather than in excess of the demand of the coming spring months. The price question is one which is commanding much attention. Confidence in values is necessary to insure active buying. It is not so much a matter of cheaper prices as it is the establishment of a reasonably stable level. In face of a widespread expectation of the advent of lower prices in many lines, buyers naturally hesitate to anticipate their wants in future commitments. It would seem therefore that if readjustment in important staples is contemplated in the near future the sooner decisive action is taken the better it will be for all interests. Along this line it is noted that a reduction of $1 a ton on Blue Annealed, $2 a ton on Box Annealed, and $4 a ton on Galvanized Sheets, to take effect on the 6th, has been announced by the principal producer. Concessions of $2 a ton have been made with more or less frequency for some time, especially on Black Sheets. Favored by mild weather, building work throughout the West has gone forward without serious interruption, and trade in builders' hardware has been benefited accordingly. Lower prices of building material, especially of lumber and cement, are also favorable to increased activity in building construction, so that on the whole the outlook in this direction is not unpromising. Wire Nails are quiet, and with the moderate stocks represented to be held by both jobbers and retailers, it will not require a very heavy consumptive demand to start a renewal of buying. The next two weeks' work, of salesmen now returning to their fields, should afford some indication of the general trend of sentiment and the pulse of trade.

NOTES ON PRICES.

Wire Nails.—While in general the trade is still in a waiting attitude and very little is doing between the mills and their customers, the year opens with a hopeful feeling that before long there may be a fair volume of business. The merchants are undoubtedly waiting until the policy to be pursued by the manufacturers is determined upon and announced. While something of a concession in price is thought to be not unlikely, the trade would be disposed to receive without disapproval an announcement that prices are to be maintained, assuming that the course of the market would justify such policy. When the question is definitely settled it is anticipated that orders will begin to be placed; meanwhile the market is gradually but slowly being cleared of goods, so that with the diminished production of the mills the danger of an oversupply is being avoided. Quotations are unchanged, as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$2.05
Carload lots, to retail merchants	2.10

New York.—Some Nails are going out in small lots at jobbers' store, but demand is very limited. As a rule prices are not shaded as an inducement to merchants to purchase. Local jobbers and Nail houses are holding small lots at store at $2.30, base. This price is, however, shaded by some sellers, while others are adhering to it.

Chicago.—Business is waiting, and pending the return

to their posts of the sales force from holiday vacations, no effort is being made either by mills or jobbers to secure orders. Active work will, however, be renewed this week. There is no doubt but that the general expectation of a readjustment of prices to a lower basis is a strong factor in holding up purchases that might otherwise be made. There is after all not so much an insistent demand for lower prices as a desire for assurance of stability of values. This question will doubtless be settled before the end of the month, either by the revision or reaffirmation of present schedules. Quotations are as follows: $2.23 in car lots to jobbers, and $2.28 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Cut Nails.—The situation is practically the same as at our last report. The mills are either closed or running at a greatly slackened pace, and are at the same time refraining from attempting to force goods on the market. There is, however, more inquiry and indications that before long Nails may again be moving. Prices in general are fairly even, with occasional shading of what may be considered the regular quotations, which are to jobbers $2.05, base, per carload, f.o.b. Pittsburgh, with freight added to destination.

New York.—Demand is very light and concessions in price are not calculated to induce merchants to stock up. Local jobbers and Nail houses are holding small lots at store at $2.30 base. This price is, however, shaded in some cases.

Chicago.—There is practically no demand for Cut Nails. Jobbers report that nothing more than stray orders for a few kegs at a time are coming from any source. Prices are unchanged; in fact, there is nothing to induce a change. Chicago quotations are as follows: Iron Cut Nails, carloads, to jobbers, $2.38; to retailers, $2.43; steel, to jobbers, in carloads, $2.28; to retailers, $2.33.

Barb Wire.—In sympathy with Wire products generally, and indeed with all staple goods, Barb Wire is waiting a definite return to normal conditions, financial and commercial. With the improvement in the financial situation the trade is beginning to consider the placing of orders, and when the question of prices for the season is settled it is expected that there will be something doing. Meanwhile, existing quotations are quite regularly maintained as before, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.20	$2.50
Retailers, carload lots	2.25	2.55
Retailers, less than carload lots	2.35	2.65

Chicago.—In addition to other influences adverse to the development of new business, the fact that this is an interim between the closing of the old and the beginning of the new season has brought trade practically to a standstill. New orders are not looked for until near the first of February, when spring work in the Southwest will be opening up. We quote as follows: Jobbers, Chicago, car lots, Painted, $2.38; Galvanized, $2.68; to retailers, car lots, Painted, $2.43; Galvanized, $2.73; retailers, less than car lots, Painted, $2.55; Galvanized, $2.85; Staples, Bright, in car lots, $2.35; Galvanized, $2.65; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Plain Wire.—Shipments are being made more freely to the manufacturers of Fencing and others to whom Wire is a raw material. The trade generally are not placing many orders, but some shipments are being made to them on orders booked in the fall. Present quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.20	$2.50
Retailers, carload lots	2.25	2.55
Retailers, less than carload lots	2.35	2.65

Chicago.—The increased number of inquiries that are reported to have been received within the past few days seem to indicate a better feeling among buyers. There is apparently no doubt but that there will be at least a fair average demand for Fencing during the year, and manufacturers are beginning to think of the provision necessary to meet it. Quotations are as follows: In car lots, to jobbers, $2.08, f.o.b. Chicago, and to retailers, $2.15.

Table Cutlery.—The Table Cutlery market seems to be in a very satisfactory condition, with the prospect of prices remaining on their present level. There appears to be no disposition on the part of any of the manufacturers to announce lower quotations, and they are accordingly declining to do so, intending to maintain existing prices, which were established indeed when the cost of producing the goods was probably less than at present. As is well known, no advances in price on this line of goods have been made during the recent marked activity in trade, and the manufacturers feel with good reason that if they did not advance prices in good times they should not be expected to lower prices in dull times. Undoubtedly the jobbers generally appreciate the fact that the present prices of Table Cutlery are close to cost, and they will probably approve the conservative disposition of the manufacturers as enabling them to place their orders for Table Cutlery with confidence that prices will be firmly maintained.

Tin and Galvanized Ware, &c.—It is as yet too early for the declines in Black and Galvanized Sheets and Tin Plates which went into effect the first of the week to have had much influence on the market for Tinware, Galvanized Ware, &c. A reduction of 5 per cent. in Galvanized Pails and Tubs was made a couple of weeks ago, discounting in part at least the present change in raw material. Other lines of Galvanized Ware will probably come down and a moderate reduction in Tinware is generally expected by the trade.

Builders' Hardware.—Trade in Builders' Hardware is in light volume and an earnest desire to book orders is evinced by most manufacturers who are in one way and another offering inducements to possible purchasers. So-called readjusements of prices give the market here and there an appearance of weakness, and contracts are being solicited at terms decidedly favorable to the buyers.

Registers.—In recognition of general market tendencies and the demand of the trade Register manufacturers have made a reduction in prices, taking effect the first of the year. The decline amounts to about 20 per cent on japanned, bronzed and plated Registers, which are quoted in lots of 50 pieces at a discount of 70 and 10 per cent. The discount on white porcelain enameled is 50 and 10, and on solid brass or bronze metal 40 per cent. A change should be noted in quotations on japanned, bronzed and plated Register Faces, which have previously taken the same discount as Registers, but are now somewhat lower, the corresponding discount being 75 and 10 per cent.

Drop Forged Wrenches.—A reduction in selling prices of about 10 per cent. has been put into effect by manufacturers of Drop Forged Engineers' Wrenches, which may now be quoted in a general way at a discount of 50 per cent.

Sash Cord.—No change is reported in the Sash Cord market, which continues to exhibit the irregular features observed for some time past. It is reported that a conference of leading manufacturers will be held this week.

Escutcheon Pins.—Prices on Escutcheon Pins show a declining tendency, moderate concessions being reported to good buyers.

Rope.—While no marked change has taken place in the cordage market, no retrograde movement has set in. Collections are referred to as being a little easier, and the number of orders shows a slight increase. Manufacturers do not anticipate anything like a revival of demand until the last of the month, or even later, if conditions this season follow those of previous years. The following quotations fairly represent the market for base sizes: Pure Manila, 11½ cents; B quality grades down to 8½ to 9 cents; Pure Sisal, 8 cents; lower grades Sisal, 7 to 7¼ cents; No. 1 Jute, ¼-in. and up, 7½ cents; No. 2 Jute, 7 cents.

Window Glass—Apparently no progress has been made in the way of any general resumption of the idle Glass factories, and the majority of those that are in operation seem to be the factories working on the co-

operative plan, where "market money" is paid at the end of each week. This means that workmen who were making from $75 to $150 per week last fire are now receiving about $1.50 per day. One such factory has offered Glass recently at 90 and 30 per cent. discount for single and 90 and 40 and 5 per cent. discount for double strength Glass, in carload lots, from manufacturers' list. These prices are supposed to represent no profit, even at reduced wages, and the only reason for selling is to obtain money to keep the factory running. Jobbers' prices are usually very elastic, and in the eastern and central districts it is reported that Glass is being offered at 90 and 40 per cent. discount on single and 90 and 45 per cent. discount on double strength Glass, from jobbers' list, for car lots.

Linseed Oil.—Business is confined to small lots at this point, covering immediate requirements. Crushers are not attempting to secure orders for delivery more than 30 days in advance, and comparatively few transactions even on this basis are reported. Prices in five barrel lots are about as follows: State and Western Raw, 43 cents; City Raw, 44 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

Spirits Turpentine.—The Southern market has shown an advance of nearly 10 cents per gallon during the week, attributed to light receipts at Savannah. Purchases have been principally for export account, and some in the trade are of the opinion that the shorts were caught and have been covering. Buying at this point has been light, as it is considered doubtful whether these high prices will prove permanent. The New York market is represented by the following quotations: Oil Barrels, 51½ to 52 cents; Machine Made Barrels, 52 to 52½ cents.

Death of Thomas H. Lane.

THOMAS H. LANE, until recently senior member of the firm of Wolff, Lane & Co., Hardware jobbers, Pittsburgh, Pa., died at his home in that city on January 1, aged 79 years. Death was due to the infirmities incident to old age. A year ago his health began to decline, and for the past four months he had been confined to bed. When 14 years of age Mr. Lane went to Pittsburgh and entered the employ of Whittemore & Wolff, with which firm he was identified for over 60 years. Several years since the firm became Wolff, Lane & Co. Mr. Lane was for many years a director of the Bank of Pittsburgh, a trustee of the Dollar Savings Bank, and also a trustee of the Western Pennsylvania Institute for the Deaf and Dumb at Edgewood. During his entire life in Pittsburgh he had been closely identified with the First Evangelical Lutheran Church on Grant street, having been an elder and a deacon for over half a century, and the superintendent of its Sabbath school for 36 years. He was also one of the projectors and an early officer of the Pittsburgh Y. M. C. A., and was closely associated with the American Bible Society. During the war he was active in the work of the Sanitary Commission.

Mossman, Yarnelle & Co.'s New Building.

MOSSMAN, YARNELLE & CO., Fort Wayne, Ind., have just taken possession of their new building, which is one of the largest and most completely equipped structures in the country devoted to Iron and Heavy Hardware, and Wagon and Carriage Material. The building is an imposing one, 122 x 150 ft. in size, with four stories above a 12-ft. basement, is massively constructed, to sustain the great demands of weight upon it, and is as nearly fireproof as mill construction can make it. This business was started in 1882 by E. F. Yarnelle and the late Frank Alderman, under the firm name of Alderman & Yarnelle. In 1890 the firm became Mossman, Yarnelle & Co., as at present., the partners being W. E. Mossman, E. F. Yarnelle, B. Paul Mossman, and E. R. Yarnelle. The business done by the house has grown until it is now considerably in excess of $1,000,000 annually.

I. L. Lockhart has purchased the Hardware stock of John Lathan, Sanwich, Ill., and will continue the business as heretofore.

PITTSBURGH NAIL AND WIRE MARKET.

Wire Nails.—New orders for Wire Nails continue very light, the product of the mills being nearly altogether specifications against contracts, and these are not coming in very freely. Reduction in prices on some lines of Finished Iron and Steel have led many in the trade to believe that possibly there will be a readjustment in prices of Wire Nails on a lower basis, but nothing official relating to this has been given out. A material improvement in specifications on contracts is looked for this month, but it is probable new business will continue light until spring trade opens up. We are advised that prices are being firmly maintained by the mills, but are sometimes slightly shaded by jobbers who have Nails in stock bought at lower prices than are ruling now and who are anxious to move them. Quotations on base sizes are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$2.05
Carload lots, to retail merchants	2.10

Cut Nails.—The demand for Cut Nails is entirely of a hand to mouth character, the trade placing orders only for small lots for actual needs, while specifications against contracts are very light. The Cut Nail mills are not showing a desire to force their product on the market under present conditions, realizing the futility of such a course, but are rather disposed to keep down output and endeavor to sustain the market until conditions improve. We understand that some mills are making slight concessions in our prices, but even this does not seem to have the effect of stimulating demand. We quote Steel Cut Nails at $2 to $2.05, f.o.b. Pittsburgh, for carload lots, and small lots at $2.10, to which freight to destination is added. Iron Cut Nails are being held at about $2.15, at mill.

Barb Wire.—Practically no new business is being placed, and shipments against contracts have about been finished up, so that the mills are doing very little. The demand for spring trade is expected to open up from some sections of the country, notably the Southwest, before this month is out. It is believed that very soon some of the contracts that have been held up by request of customers, will soon be released and shipments on these go forward. It is stated that in the absence of business, prices are being held. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots	$2.20	$2 50
Retailers, carload lots	2.25	2.55
Retailers, less than carload lots	2.35	2.65

Smooth Fence Wire.—There is practically no new buying, and specifications against contracts are coming in very sparingly, so that shipments by the mills at present are very light. It is the opinion that consumption of Wire Fencing this year will not be as heavy as last year and in 1906. In the present quiet condition of the trade, it is stated that prices are being well maintained. Quotations for base numbers 6 to 9 are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots	$1.90
Retailers, carload lots	1.95

JOHN A. GREGG, Burlington, Iowa., who has been representing in his territory a number of manufacturers of Hardware and Hardware Specialties, has incorporated his business under the name of John A. Gregg Company. This company will continue to look after the interests of the manufacturers whom Mr. Gregg has personally represented for so many years.

THE MOSSBERG WRENCH COMPANY, Central Falls, R. I., is remembering its agents for the sale of "Sim-Pull" Countershafts with a souvenir in the form of a letter scale. The scale is a thoroughly practical and accurate machine of attractive design and nickel plate finish, and makes a handsome and useful piece of desk furniture.

RETAIL HARDWARE ADVERTISING.

RESOLVED: That the retail Hardware merchants throughout the country should, as a rule, prepare their own advertisements rather than call upon outside talent to do that work for them.

BY H. L. M.

At the outset we will assume that Hustle is a Hardwareman of average mentality and rating, owning a stock that inventories about $15,000, with everything he owns invested in his business, having on hand a working capital of $2500 and confronted by the necessity of paddling his business canoe by his own strength and gray matter in a community of say 20,000 souls.

This man, Hustle, has been in business several years; he has seen the changes that a few years have wrought; he has experienced the rebuffs to be charged to catalogue house competition; he has seen his margin of profit fluctuate on a declining scale, and in various ways he has come to realize that he must make good his name. His competitors have the bulk of the retail trade of the town. After taking a careful mental summary of the situation, Hustle resolves to advertise. Just at this psychological moment a circular comes to him from one who would do just that work for him. "No," Hustle soliloquizes, "I'll do it myself. I know my trade, I know my people, and I know my conditions and competition. Guess I'll write my own ads."

Hustle's First Snag

But Hustle's first dilemma arises when he essays to buy space from his local newspapers. "Seventy-five dollars a year for a 5-in. space! That is pretty high, isn't it?" he remarks to his local editor. "But I'll pay it;" and the contract is made. Now, Hustle's idea of advertising is that which 999 men out of 1000 hold.

He thinks advertising should be written to specify big black type, so he proceeds to announce that Hustle is selling Lawn Mowers at $1.98 all the coming week. It looked well in print, too (to Hustle), but somehow or other it didn't sell Lawn Mowers. Picking up the paper one night at home he saw a notice that was headed:

IS YOURS
A LAWN
OR A HAY FIELD?

and inasmuch as his own grass needed cutting he jokingly repeated it to his wife, and reading on he found he had read the advertisement of a competitor, who was talking about Lawn Mowers, too.

Following His Competitor's Example.

Hustle didn't like the advertisement, either. "What good is it to head a Lawn Mower ad. like that?" he mused. "How does a hay field affect a Lawn Mower? Why, I don't believe that'll do a bit of good in moving Blank's stock of Mowers." It sort of made him mad, too, to think he had been caught by a competitor, but he was madder than ever next day to see a whole truck load of Lawn Mowers unloaded in front of his competitor's store.

Hustle reflected that this was the *second* shipment the other fellow had received inside of a month, and the Lawn Mower season had only begun. The stores were adjacent, so he had a clerk watch to see how many Lawn Mowers Blank put into his delivery wagon that day. At night the clerk reported six—which was just five more than he, Hustle, had sold. "H-m," mused Hustle, "maybe that ad. is doing it. Mine isn't selling any Mowers, that's a cinch. I'll just re-write my copy and swipe Blank's style." Forthwith he sent to the newspaper offices an advertisement of which the heading looked like this:

YOU HAVE
YOUR HAIR CUT,
DON'T YOU?

and the text went on to say that hair and grass were no different in appearance, if allowed to grow long; that either would show the owner thereof to be careless and slouchy, &c. When that came to be printed, some of Hustle's friends dropped in and joked about the "hair cut," but two of them bought Lawn Mowers. And the sales of Mowers that week really amazed the surprised and delighted Hustle.

Doing the Same with Screens and Screen Doors.

The next week he featured Screens and Screen Doors, and he advertised them in print just as he would talk to a prospective customer. He used a style that was chatty and which looked like reading matter, and that had alluring headings. He talked but of the twin subjects. The salesmen noticed and told Hustle how the Screens were being asked for by customers, and Hustle knew the demand was being created by the ad. and nothing else, so he smiled, and when it was necessary he ordered more Screens.

Hustle had *learned how to advertise*, and thereafter he found his cash sales as well as charges were increasing at a gait that was very satisfactory.

Advantages of Being Your Own Advertising Writer

There are basic principles about advertising that any man may grasp and put into operation. Advertising Hardware properly can be learned just as well as learning to buy it. The fact of knowing one's own trade is a factor that must operate in favor of a Hardwareman who writes his own ads.

Then, too, local news may be taken advantage of, and so embodied into one's advertising as to create interest which in itself must attract readers. And attracting readers is to pave the way for a sale. But by far the greatest factor is that a Hardwareman knows his climatic conditions best, by which I mean that if Screens are seasonable, he can so advertise. No expert service, however good, could foresee the need of the particular season as well as the man on the ground.

If a Hardwareman will subscribe to any good publication of the advertising profession, he will learn much that will aid him immensely. Any influence so potent as advertising is worth the time looking into, and if a bit of reading on the subject can aid a man the time consumed in that way is very profitable.

Learning by Experience.

I think the vast majority of business men do not know the potentiality of advertising and do not approach the subject with a proper recognition of its great interest, not only from its return giving features, but its intensely entertaining aspect. There is nothing prosaic about it. Advertising is ambition since it reflects a man's striving to better his condition. To be without ambition is to be dead without the knowledge of being so. And to do without advertising is to die a business death.

Approached thoughtfully, the problem of advertising is one that any man may reduce for himself by simply treating it as he treats himself on any other score that must needs be learned. And it can be learned only by experience. Therefore, he who would master it must do so for and by himself.

Importance and Value of Advertising.

Our forefathers gave us a priceless legacy in bequeathing the love of bartering. Apart from the financial aspect is there anything more alluring than to possess something that others want and need, and to bring about the transaction that supplies the demand? That it yields the wherewithal which allows us creature comforts is a reason par excellence, but the triumph of wit is highly satisfactory.

The Connecticut Yankee who dealt in wooden nutmegs was far ahead of his time; yet, think what his wit plus advertising would have done! And do you think he would have allowed any one else to write his advertising? Not much!

The schemer who advertised to sell a steel engraving of George Washington for $1, and who sent a 2-cent stamp to those who replied, knew the value of advertising. Mark you, *he* knew it, and *he* used it. So, too, the scamp who, at the hight of the Bicycle craze, offered an up to date safety model for $5, and who sent a Safety Pin to such people as bit his bait, knew the potentiality of advertising, but he did his own ad. work.

An advertising writer of national reputation has this

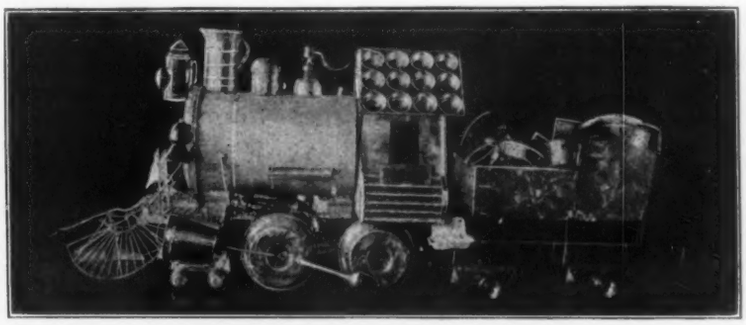
to say of his work: "Where is there greater romance and excitement than in battling with all the force of heart and brain for the development and success of an idea into which a man has put his whole soul? Yes, there is the point: a man must use his soul to find the higher side of any business; it is the soulless grind that is death to ideals."

Grit, Grace and Gumption.

Handle one's own advertising! Indeed, a man should do so, for then one's grasp of it is the more supreme. Very often the kindest turn one man may do another is to kick out the props from under the other and let the other gather headway and impetus of his own generating. "No lane so long but has its turning," and to the man of grit, grace and gumption advertising will prove no exception. "Where there's a will there's a way," but there's never a signboard showing the path. Each must find the way, and the more earnest the seeker the surer he is to pay the price of the search and to seek it alone. If the path be worth seeking he will have to hunt for it alone, for man is so constituted that he refrains from giving away information when silence is golden—to him.

TINWARE LOCOMOTIVE.

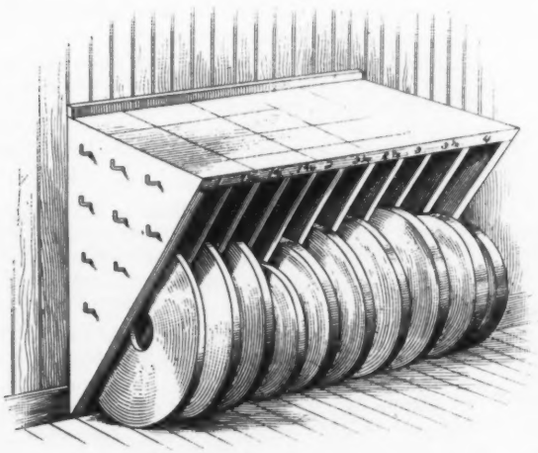
AN addition to the rolling stock of the Hardware line is offered by Brownell-Mason Company, Fitchburg, Mass., whose show window served as a round house for the locomotive here shown. The ingenious machine is said to contain pretty nearly everything in the way of Tinware carried by the company, so that an enumeration is scarcely necessary. Most of the articles will be recognized in the photograph, such as the Dark Lantern which forms the headlight, the Cake Pan wheels, with a Long Handled Spoon for a connecting rod, and Gem Pans forming the roof of the cab. A Soap Dish below the cab makes a step for the engineer. A Wire Toaster represents the cow catcher, and the boiler of the locomotive is a good sized Garbage Can. The Wire body of the tender contains a plentiful supply of Pots and Pans, &c., to represent fuel.



Rolling Stock for the Hardware Line.

GLASS TABLE AND BELT RACK.

THE novel piece of Hardware furniture illustrated herewith was seen in the store of James H. Bryan Company, Westfield, Mass. Strictly speaking, it is a glass cutting table, but the space underneath is ingeniously used for the accommodation of the narrower widths



Glass Table and Belt Rack.

of leather belting. Compartments of the proper width to contain the different sized coils are formed with thin pieces of board, and are marked with figures indicating the width of the belt, ranging from 1 in. up. A feature of noteworthy convenience is the use to which the table may be put in cutting belting, as well as glass and for laying out goods, wrapping packages, &c., when not otherwise occupied.

TRADE ITEMS.

THE GRATON & KNIGHT MFG. COMPANY, Worcester, Mass., has recently completed a 72-in. three-ply Leather Belt for a prominent lumber company of San Francisco. In the construction of this Belt the backbone centers of 245 steer hides were used. The Belt is 141 ft. long, weighs 2827 lb., and will be, so far as the company has been able to discover, the largest Belt on the Pacific Coast.

THE AMERICAN RIVET COMPANY, New Haven, Conn., has added a department of Metal Stampings, with George S. Davis, recently with the Boston Pressed Metal Company, Worcester, Mass., in charge. Mr. Davis will include in his duties visiting the trade in New England and Pennsylvania.

THE WYOMING SHOVEL WORKS, Wyoming, Pa., manufacturer of Shovels, Scoops, Drain Tools, &c., has favored its customers and friends with a reminder of the season in the shape of a convenient weekly memorandum calendar for 1908.

FRED. E. LAY, for 15 years manager of the American Whip Company, Westfield, Mass., has resigned his position to become associated with the Lay Whip Company, Rock Island, P. Q., of which his father, Edwin R. Lay, is president. Mr. Lay had been a director of the United States Whip Company, the parent corporation, during his management at Westfield, and is well known as one of the expert manufacturers of Whips in this country. He will retain his residence at Westfield.

IWAN BROTHERS, manufacturers of Post Hole Augers and Diggers, Drain and Mining Tools, Hay Knives, &c., Streator, Ill., have issued a large paged and very striking folder, entitled "How We Dig Up Dollars for You," in which they describe a portion of their plan for increasing the sales of their products during 1908. A partial list is presented of agricultural publications in which their advertisements will appear regularly during the year, with the remark that as many millions of readers will see these announcements every month it will be well for the Hardware merchant to get ready to supply the increased demand for the goods thus developed. Their business policy is tersely described as "co-operation and profit for the dealer who sells Iwan specialties—satisfaction for the man who uses them." A new edition of "Easy Digging," a booklet intended for general curculation, has recently been issued, and merchants will be supplied with as many copies as desired on application.

THE Sporting Goods business heretofore conducted by Mrs. Rosa Koenig, under the name of E. G. Koenig, 875 Broad street, Newark, N. J., has just been incorporated under the style of E. G. Koenig's Sons. The officers of the new company are Albert S. Koenig, president; Mrs. Rosa Koenig, vice-president, and Edwin G. Koenig, secretary and treasurer.

M. G. RODEARMEL, 206 Commercial Building, Minneapolis, Minn., has issued his 1908 booklet, enumerating the 16 manufacturers, and their principal products, for whom he acts as agent in the Northwestern States. Mr. Rodearmel has represented several of the concerns for the past 20 years.

RETAIL HARDWARE CONVENTIONS.

During the next two or three months the following retail Hardware conventions will be held. Where the asterisk appears elaborate plans are being made by the association officials for the accommodation of Hardware exhibits by manufacturers and jobbers.

INLAND EMPIRE ASSOCIATION, Spokane, Wash., January 15, 16 and 17. Secretary, E. W. Evenson, Spokane.

OREGON ASSOCIATION, Portland, January 21 and 22. Acting Secretary, C. D. Lownsdale, Portland.

TEXAS ASSOCIATION,* Dallas, January 21-23. Secretary, J. W. McManus, Dallas.

PACIFIC FEDERATION, Portland, Ore., January 23-25. Secretary, E. W. Evenson, Spokane, Wash.

NORTH DAKOTA ASSOCIATION, Fargo, January 28-30. Secretary, C. N. Barnes, Grand Forks.

SOUTH DAKOTA ASSOCIATION,* Aberdeen, February 4-7. Secretary, H. E. Johnson, Redfield.

WISCONSIN ASSOCIATION,* Milwaukee, February 5-7. Secretary, C. A. Peck, Berlin.

CONNECTICUT ASSOCIATION, Meriden, February 10 and 11. Secretary, James de F. Phelps, Windsor Locks.

KENTUCKY ASSOCIATION, Louisville, February 11-13. Secretary, John R. Sower, Frankfort.

NEBRASKA ASSOCIATION,* Lincoln, February 11-14. Secretary, J. Frank Barr, Lincoln.

INDIANA ASSOCIATION,* Indianapolis, February 18-21. Secretary, M. L. Corey, Argos.

IOWA ASSOCIATION,* Cedar Rapids, February 18-21. Secretary, A. R. Sale, Mason City.

NEW YORK ASSOCIATION,* Buffalo, February 18-22. Secretary, John B. Foley, Syracuse.

PENNSYLVANIA ASSOCIATION,* Altoona, February 24, 25 and 26. Secretary, J. E. Digby, McKees Rocks.

OHIO ASSOCIATION,* Columbus, February 25-27. Secretary, Frank A. Bare, Mansfield.

MINNESOTA,* St. Paul, February 25-28. Secretary, M. S. Mathews, Guaranty Building, Minneapolis.

ILLINOIS ASSOCIATION,* Peoria, February 26-28. Secretary, L. D. Nish, Elgin.

NEW ENGLAND ASSOCIATION,* Boston, March 11 and 12. Secretary, Chas. L. Underhill, Somerville, Mass.

North Dakota Retail Hardware Association.

Weather conditions permitting it is believed that the twelfth annual meeting of the North Dakota Retail Hardware Association will be the most largely attended gathering in the history of the organization, as during the past year quite a number of accessions to the membership are reported. The railroads have agreed to a rate of a fare and three-fifths on the certificate plan, which brings it down as heretofore on a basis of 2 cents a mile each way. At the morning session on Wednesday, January 29, Governor Burke of North Dakota will make an address. S. R. Miles, president of the National Retail Hardware Association, will also be in attendance, and will make an address. A good deal of the convention time will be devoted to the Question Box, and it is hoped that this general discussion of practical topics will be interesting and instructive. Papers will be read by R. E. Saberson, general manager of the Berkley System Company, on "Effective Advertising," and by N. A. Burdick on "Independence in Business or Standing on Your Own Basis." Other features of the meeting will be talks by Prof. E. F. Ladd on practical Paint tests and their results, and by Chas. F. Ladner, president of the Retail Hardware Mutual Fire Insurance Company of Minnesota, on mutual fire insurance.

Ohio Hardware Association.

At the suggestion of a number of last year's exhibitors the committee in charge of the exposition feature of the Ohio convention has made arrangements to erect a number of universal booths. This booth obviates the expense and annoyance to the exhibitor of looking up a carpenter and decorator, the booth being ready to move into when turned over to the party engaging the space, who defrays the actual cost of erection. Frank A Bare, Mansfield, secretary, in a felicitous New Year's greeting to the merchants of the State, reminds them in regard to the time and place of the next annual meeting, and suggests as a good resolution to make at the beginning of the year that of attending this gathering of the trade, which promises to be a notable one.

Minnesota Retail Hardware Association.

The Minnesota Retail Hardware Association has lately distributed two postals, one of which gives an exterior and the other an inferior view of the Auditorium in St. Paul, in which the association's first Hardware exposition will be held in conjunction with the annual meeting, February 25-28. The Auditorium is a very large structure, and is admirably adapted for exhibition purposes.

Annual Banquet of Pacific Hardware & Steel Company.

THE PACIFIC HARDWARE & STEEL COMPANY, San Francisco, held its annual banquet at the St. Francis Hotel in that city on December 20. It was participated in by upwards of 140 members of the company's selling and executive force. The attractive menu bore a photographic view of the city after the earthquake and another taken last month, with the terse comment, "No magic, but work." An illustrated souvenir was also issued, embellished with clever drawings, referring in a more or less humorous and pointed way to members of the staff. Of a rather more serious nature are the business maxims and well turned epigrams scattered through the pages, from which we quote the following:

There are never too many competitors in a business. If a salesman does not get trade it is not because it is overdone, but because the salesman is outdone.

When complaints are made by customers, always count them. Then compare the number of complaints with the number of customers. Do not be governed by one dealer's opinion, but form your judgment from the counting. The majority rules.

Continual urging is the price of success to the salesman.

Finding good business is in reality finding good friends who will do business your way and profit thereby.

A dealer cannot get a low price unless he seeks it. A salesman cannot get a fair price unless he asks it. Each in his place.

A sense of hurry will do more to befuddle the human faculties than any other feeling. Work quick, but don't bother about the train. Sell goods as long as there are any goods to be sold. Take the train afterward.

In salesmanship a smile is a little thing, yet it has brought more customers than have price or merit in merchandise.

Enthusiasm is a quality which any one can make grow by persistent practice.

A strong pull together means more for both house and salesman. In a tug of war the house will win from the salesman, but both will lose with the customer.

Industry—persistent industry—will win where mere brilliancy will prove an utter failure.

The best you can do for a customer must be determined by an estimate of the best you can do for your employer. The employer first, the customer next, but justice to both.

JOHN J. SNYDER, founder of the prominent Brooklyn, N. Y., house of John J. Snyder & Son, died January 6, in his 78th year. He was giving active attention to business up to within two weeks of his death. Mr. Snyder was recognized as one of the pioneer business men in Flatbush, and his advertising under the style of Snyder of Flatbush has long been familiar in that district. He was an able and successful merchant, and a public spirited citizen, active in promoting the welfare of his community, as well as in church work. His sons, who have been associated with him, have long relieved him of the detail of the business and will of course carry it on without change.

MAIL ORDER FREIGHT RATE CASE.

THERE has been a good deal of mystery in shipping circles regarding a complaint pending before the Interstate Commerce Commission in the name of the Export Commission Company, which has evoked so much interest that the commission decided to call a public hearing at Washington this month, where all parties interested could appear to give evidence or offer arguments; and it is understood that the commission is open to receive light from any source on the subject.

The Case Involves the Right of Forwarding Agents

to combine less than carload shipments into carloads, to be carried by the railroads at the carload rate. The Western and Southern roads permit this, although they have other restrictions on carload rates which are not in force on Eastern lines, but the Official Classification has rules that are carefully framed to prevent forwarding agents from obtaining carload rates on mixed shipments.

The mail order houses have not appeared openly in the case, but it is understood that they have a considerable interest in it, as they are able, by working through forwarding agents, to get carload rates on small shipments, a very important advantage on long distance orders.

The rule of the Official Classification, which defines and limits the right of the shipper to carload rates, is as follows:

> In order to entitle a shipment to the carload rate, the quantity of freight requisite under the rules to secure such carload rate must be delivered at one forwarding station, in one working day, by one consignor, consigned to one consignee and destination, except that when freight is loaded in cars by consignor it will be subject to the Car Service Rules and charges of the forwarding railroad. (See Note.)
>
> Note.—Rule 5B will apply only when the consignor or consignee is the actual owner of the property.

The complaint before the commission is against this "note," which excludes the forwarding agent from carload rates, because in such traffic neither the consignor nor the consignee is the owner of the property. This note throws such traffic under the ban of another rule in the Official Classification, No. "15 E," which expressly forbids combining shipments into carloads by forwarding agents excepting at the less than carload rate for each lot of goods.

The Present Rules of the Official Classification

do not afford many cases for complaint on the part of manufacturers or merchants. A Hardware merchant, for example, may buy from two or three or a dozen firms in New York, and if the goods take the same carload class rate they can all be loaded in a car at the carload rate. The shipment must, of course, be delivered to the railroad by one firm on one bill of lading. The fact that the consignee is the actual owner or buyer of the property entitles him to the carload rate. There may be cases where a zealous local agent of a railroad, in seeking to protect the less than carload rates of his company, has attempted to interpret the rule otherwise, but such objections can be overcome by making the shipment in the name of the merchant or consignee. The consignee is then in the position of shipping his own property to himself. As a rule, however, the Eastern roads do not object to this right of retailers and jobbers to obtain the carload rate on "combined" shipments of which they are the actual owners.

The Leading Eastern Roads Also Permit

a manufacturer or jobber to load in a car, at the carload rate, goods for two or more consignees at the same destination, if shipped on one bill of lading, and the principal roads have stop over privileges in their tariffs, which allow a car to be loaded for buyers in different towns on the same line, the car stopping in transit at the first town, and going on to destination at the full carload rate. The Official Classification rule is very liberal in permitting any articles taking the same carload class rate to be loaded together. The Western roads do not permit this mixing of different articles of the same class rate, except in a few cases, which are specially provided for. The general rule in the West is to limit carload rates to straight cars of each article named in the classification. This rule is maintained in deference to the wishes of local jobbers through the West.

Efforts Have Been Made to Confuse the Issue

before the Interstate Commerce Commission, by having it appear that the right of merchants and manufacturers to make combined shipments in carloads is involved in the case now pending. The railroads, however, do not object to giving the carload rate, where either the shipper or the consignee is the actual owner of the property. The real issue in this case is not, after all, the rule of the Official Classification. What the forwarding agents and mail order houses hope to prevent is the adoption of similar rules in the West, by Western or transcontinental roads, whose less than carload rates are high compared with eastern rates. On shipments to the Pacific Coast the forwarding agent often makes a profit or saving of several hundred dollars per car, especially on "household goods," a classification which embraces a large line of mail order business.

Position of the Forwarding Agents.

The forwarding agents, of course, feel that they have a well founded grievance against the railroads, when a rule is enforced which destroys their business. They claim that a common carrier has no right to inquire into the ownership of property offered for shipment. When a quantity of goods of one class, sufficient to make a carload, is offered to the railroad by one shipper, and is unloaded at the other end by one consignee, it is immaterial, they say, to the railroad, whether the shipper manufactured the goods, bought them in trade or stole them, or whether a part of them belong to some one else. On export shipments, especially, it is claimed the roads should not interfere with a method of shipping which promotes business.

The Railroad View.

To the railroads, however, the issue is solely a question of revenue. They want the less than carload rate whenever the shipment is not a bona fide carload as defined by their rules. They claim that if they opened the door to forwarding agents in the Eastern States they would be overrun with bureaus and agencies of this kind, and parcel delivery companies which would do an express business at carload rates by working in co-operation with similar agencies in other cities and towns. They have gone so far in their efforts to stamp out business of this nature that in Cincinnati they have frequently required affidavits from shippers certifying to the ownership of property.

Perhaps the strongest argument, from the railroad point of view, is that neither the carriers nor the Interstate Commerce Commission would have any control over the rate which the forwarding agent would quote to the shipper. If, for example, the carload rate is 30 cents and the L. C. L. rate 50 cents, the forwarding agent might quote his patron 35 or 40 cents, or any intermediate figure that would be mutually satisfactory, thus creating a new and irregular basis of rates, in which there would be more or less discrimination. On some classes of goods the rates to the Pacific Coast show a margin as high as $1.50 per hundred, between the carload and less than carload tariffs.

Judge Kohlsaat's Decision Against the Forwarding Agents.

In 1901 Judge Kohlsaat, in the Federal District Court in Chicago, upheld the right of the railroads to enforce an earlier form than the present rule of the Official Classification, in which the same end was sought to withhold carload rates from forwarding agents. A forwarding agent had asked for an injunction to restrain the roads from enforcing the rule, but the case was dismissed, and in reviewing the questions involved, the court said:

> The difference between the carload and less than carload rates placed at the disposal of the forwarding agent may easily be so manipulated by him as to defeat the spirit of the Interstate Commerce Act. He is not subject to the provisions of that act. Manifestly, he may evade the very provisions of the act which he is claiming the defendants are defeating in this case. He can offer different rates to the different shippers, with no other limit than business necessity. Not only this, but he can give his principals lower rates than those given by the defend-

ants to their less than carload shippers. The logical outcome of such a condition would be, according to the inexorable rules of commerce, that the defendants would be obliged either to do an injustice to their shippers of less than carload lots or reduce all their rates to a carload basis.

On the issue of "like and contemporaneous service," for which the Interstate Commerce law declares that rates must be equal, the court announced the conclusion that there is an important legal distinction in the service. Where shipments owned by several people are merged in one car, there would be an additional liability on the part of the railroad to the "beneficial owners," for which the carrier is entitled to charge a higher rate than where the property belongs to one owner.

In Many Respects This Question Presents a Close Parallel

between the freight forwarding agent and the ticket broker. The broker or scalper buys the wholesale excursion rate tickets of the railroad and sells them to the "retail" passenger. The railroads have spent an enormous amount of money in efforts to prevent any one from dealing in this form of transportation, and have recently won important decisions in the courts. The latest of these decisions in a federal court, is that if the railroad has stated in its printed tariff filed with the commission, that tickets sold under the tariff are not transferable, the condition thus established will be binding on the purchaser.

Death of John G. Brown.

JOHN GREENWOOD BROWN of the Heavy Hardware and Supply house of Brown-Wales Company, Boston, Mass., died January 1, at the age of 61. He was born in Cambridge, and was educated in the local public schools. After the war he went to work for the iron merchants, Fuller, Dana & Co., then located on Fulton street, Boston. After several years with this firm he engaged as traveling salesman for Gay, Manson & Co., iron merchants of that city, with whom he remained until 1869, when he left to enter into partnership with Josiah Bacon, under the firm name of Bacon & Brown, also in the iron business, located on Fulton street.

In 1876, while located on Purchase street, he bought Mr. Bacon's interest, and continued the business until 1883 as John G. Brown & Co. In 1883 he took as partner Manley W. McClure, the firm name being changed to Brown, McClure & Co. In 1890 he erected the six-story brick building now occupied by the company, and Wm. Quincy Wales became associated with the firm under the name of Brown, McClure & Wales. The firm continued as above until the death of Mr. McClure in 1893, when it was changed to Brown & Wales, being incorporated in 1903 as Brown-Wales Company, with Mr. Brown as president. Since 1895 new lines have been added, including Plumbers' and Steam Fitters' Supplies, Power Transmission, &c.

Mr. Brown was a man of the highest standing in the community. He was deacon for many years, and up to the time of his death in the Old Cambridge Baptist Church a very regular attendant and much interested in the work. He was vice-president for several years and president for one year of the Cambridge Y. M. C. A., a member of the Cambridge Club, on the Executive Committee of the General Theological Library and a member of several other charitable and religious organizations. He was obliged to resign from many offices last year on account of his health. He left a widow and daughter.

A special meeting of the New England Iron and Hardware Association was held to take action on his death, and eulogistic remarks were made by many representative men in the trade. A special committee attended the funeral services held in Cambridge last Sunday.

THE OHIO RENEWING COMPANY, Niles, Ohio, has a process of resharpening Files, by which any File of good quality may be resharpened, it is said, from three to six times. The resharpened File will be as good as a new one, it is claimed. The company's plant consists of two buildings equipped for the renewing of worn or dulled Files and a two-story office structure.

CONTENTS.

	PAGE.
The Steel Ore Dock at Narvik, Norway. Illustrated	127
Casting a Nut in a Pulley Hub. Illustrated	131
Two New Lapointe Broaching Machines. Illustrated	132
The Tin Plate Industry in Canada	133
A Canadian Time Keeping System. Illustrated	134
Iron Ore on Lake Erie Docks	135
The Westinghouse Machine Company Receivership Plans	135
The Nisbet Dust Catcher, Gas Washer and Reheater. Illus.	136
Customs Decisions	137
The Stewart Gas Furnace. Illustrated	138
The New Hanchett Automatic Saw Sharpeners. Illustrated.	139
Lake Superior Iron Mining in 1907	140
The Chase Improved Industrial Railroad Switch. Illus.	142
The Chicago Hardware Foundry Company. Illustrated	143
Fluctuations in the Prices of Iron and Steel Products, 1898-1907	144
Iron and Steel Production in 1906	145
American Society for Testing Materials	145
A Universal Edge Tool Grinder. Illustrated	146
Hardening High Speed Steels	147
Editorial:	
The Iron Age Index	148
Progress in Machine Tool Design	148
Unsound Machinery Criticism by Foreign Buyers	148
A Good Outlook for Lake Shipyards	149
Correspondence	150
The Lash Steel Process	150
The Dire Cost of and Best Remedy for Carelessness	151
Connecticut Industrial Dividends	153
The Trade Conciliation Committees	153
November Exports and Imports of Iron and Steel	153
Congress to Enact a New Census Law	154
Judge Gary's Forecast	154
Trade Publications	155
Plate Prices for Sixteen Years	155
Many More Furnaces Out	156
Personal	157
News of the Works:	
Iron and Steel	158
General Machinery	158
Power Plant Equipment	158
Foundries	159
Fires	159
Hardware	159
Miscellaneous	159
The Ohio Suits Against the Plumbing Supply Trade	159
The Iron and Metal Trades:	
A Comparison of Prices	160
Chicago	160
Cleveland	162
Cincinnati	163
Philadelphia	164
Pittsburgh	165
Birmingham	166
Metal Market	167
New York	167
Iron and Industrial Stocks	168
Aids to Cheerfulness	168
The Machinery Trade:	
New York Machinery Market	169
Cleveland Machinery Market	169
Philadelphia Machinery Market in 1907	170
Chicago Machinery Market	172
Cincinnati Machinery Market	173
New England Machinery Market	173
Government Purchases	174
The Interstate Commerce Commission Urges More Legislation	174
Obituary	175
Labor Notes	175
Hardware:	
Condition of Trade	176
Notes on Prices	177
Death of Thomas H. Lane	179
Mossman, Yarnelle & Co.'s New Building	179
Retail Hardware Advertising	180
Tinware Locomotive. Illustrated	181
Glass Table and Belt Rack. Illustrated	181
Trade Items	181
Retail Hardware Conventions	182
Annual Banquet of Pacific Hardware & Steel Company	182
Mail Order Freight Rate Case Before Interstate Commerce Commission	183
Death of John G. Brown	184
Developing Export Business by Correspondence	185
A Two-Story Steel Rack. Illustrated	186
Price-Lists, Circulars, &c	187
Requests for Catalogues, &c	187
Butler Brothers' St. Louis Building	188
The Little Giant Gas Machine. Illustrated	188
The Bull Terrier Wrench. Illustrated	188
Bathroom Fixtures	188
Pressed Steel Factory Equipment. Illustrated	189
Knapp Electric & Novelty Company. Illustrated	189
Current Hardware Prices	190

DEVELOPING EXPORT BUSINESS BY CORRESPONDENCE.

BY OBSERVER.

HOW can small manufacturers, not able to spend much money on the effort, get a share of export business? The question is sometimes answered with the declaration that small manufacturers had best stay out of the field. This summary solution is unsatisfactory to interested manufacturers, nor is it in principle in accord with American spirit. It is not impossible for the small manufacturer to obtain remunerative foreign connections, and that without the expenditure of much money, unless time, care and study count as money. One example of what has been and can again be done is well illustrated by the following

True Story of Small Beginnings.

Not 10 years ago a young man with the export "bee in his bonnet" came to New York to try his luck with the hundreds of others then, and now, engaged in export business. He controlled certain lines of goods that cannot be particularized here further than to remark that they are first cousins to Hardware and are bought by most Hardware dealers the world over. This person had a total capital of $1500 in cash, and his first move was to select complaisant and accommodating bankers. To them he explained that his initial deposit and subsequent patronage depended upon the banker's assistance and co-operation, and that first of all he expected the bank that he patronized to obtain for him, through its foreign correspondents, the names of one, two or three possible customers in his line, in every city of any importance throughout the world, whom said correspondents could and would recommend as financially good and responsible and generally desirable customers. The young man found a bank that accepted his terms and in due course the addresses of responsible and highly recommended merchants in the line began to arrive in New York. With these merchants the young man began a persistent and intelligent course of correspondence. The result may be gauged by the fact that last year he had $30,000 to lose in a disappointing venture of another sort.

Study and Time Required.

The method just outlined appears plausible enough to be within the compass of any man, and wonder may be expressed that scores of other young men have not essayed similar procedure. The answer is, they have. That but few have been similarly successful is to be accounted for on two grounds: First, lines of goods unsuited to foreign demands. Second, and far commoner, lack of intelligence in cultivating the foreign correspondent. Intelligence is a broad term. Here it is meant to cover thought and study concerning foreign markets and export conditions; broad mindedness—*i. e.*, ability to put one's self in the other man's place; shrewdness in selecting the telling, fetching points; ability as a letter writer to put before one's correspondents telling features of goods that will appeal to them, and a generally broad education and culture, which (or the lack of which) is bound to make itself apparent in the course of correspondence.

One thing, however, that will obviate the foregoing qualifications in building up an export business is appreciably lower quotations than any competitors, domestic or foreign, are able to offer. The manufacturer who can offer lower prices than competitors has no excuse for not obtaining a large foreign business. However, few manufacturers are in that fortunate position, and most of them regard it as the more desirable policy to maintain prices at as near a parity as possible with competitors. Under the latter circumstances the problem of successfully cultivating an export trade by means of correspondence resolves itself into

How Effectively to Present Quality and Superiority.

It is a fact, repeatedly demonstrated in the personal experience of the writer, that not 1 in 20 American manufacturers knows how to present the important features of his goods in a letter. This is no exclusive reflection on the American manufacturer, for precisely the same thing is true of his British cousin. But the small manufacturer whose interests we are considering must learn how to write letters, for largely on them depends his success. A certain foreign merchant on a visit to the United States was greatly impressed with the claims made by one of the manufacturers with whom he was doing business for a new line of goods that was just being brought out and ordered a sample lot. In about six months the new goods arrived, but by that time the foreign merchant had quite forgotten the forceful way in which their advantages had been presented to him at the factory, and he found it difficult to impress his salesmen in the same way that he had been impressed. He therefore wrote to his American suppliers, "Please have Mr. Smith write me personally about these goods. Let him sit down with his stenographer for half an hour and talk to her precisely as he talked to me. I believe in the goods, but I must inspire my salesmen here as I was inspired in America, and I cannot do it alone." In reply a letter was indeed received from Mr. Smith, a half page, double spaced letter, saying nothing of any interest at all. Mr. Smith could not talk to a stenographer as he talked to a customer.

This incident is not only true but by no means an isolated case. It is illustrative of a deficiency that the small manufacturer who hopes for success in export business through correspondence must overcome.

Condensation in Correspondence.

With some business men it seems to be a physical impossibility to say more in a letter than: "Dear Sir: Our terms are less 50—10 and 5 per cent., delivery f.o.b. Keokuk. We hope to receive your order." The man who can do no more may, quite by accident, receive a sporadic order or two, but he will never get rich from export demands for his goods. Brevity is sometimes considered not only the "soul of wit," but to lend strength to a letter. Without attempting to infringe on the prerogative of certain schools established for the express purpose of teaching how to write letters, it may be observed that in thus attempting to cultivate export connections the fact must not be forgotten that what is familiar to us may be absolutely new, strange, unheard of, to the foreign correspondent. An American manufacturer of machines for making cement building blocks has lately been circularizing Europe, including many places where similar apparatus or, in fact, this method of construction has never been heard of. His circulars merely describe his machines, and that, by the way, in none too lucid a manner. A large percentage of the recipients of these circulars have not the remotest idea of what it is all about. They are not aware of the extent to which the industry has been carried in the United States, nor have they any notion whatever of the comparative costs of such construction or of the advantages claimed for it. One of our manufacturers of Marine Gasoline Engines can find nothing more interesting to say in a recent circular letter than: "We always carry large stocks and can make prompt shipments. Special inducements to foreign agents." Condensation sounds well in theory: how to make it pay dividends is a question for serious study.

To Obtain the Addresses of Desirable Foreign Correspondents.

is a comparatively simple matter. Perhaps times have changed in the last 10 years, and it may not be so easy now as then to secure the co-operation of bankers in getting addresses which, of course, when thus received, are especially desirable, not only because reliable, but because of the induced willingness of the home bankers to finance bills upon houses thus recommended to them. But other means of securing such addresses are not lacking. There are Americans, individuals, associations and trade papers, making a specialty of supplying such names, and if a fee of one sort or another is required it will not, probably, be exorbitant. In almost every foreign country there exists so-called "information bureaus," the business of which is to give reports as to the financial position of local merchants, and even if such reports are not wanted at

the outset, arrangements may be made for the supply only of names and addresses of desirable correspondents.

Personal Selling Trips.

However small the manufacturer, there would seem to be no insuperable obstacle to his making at least one personal visit to what, in his opinion, is likely to prove his largest market. In most lines of goods such a market may be assumed to lie in Europe. A trip to Europe and a visit of two or even three weeks among probable buyers of a manufacturer's goods need not cost over $250 beyond New York, and if really in earnest in a desire to build up foreign business and confident that he has the goods to do it with, such an expenditure would seem to be well within the means of, as well as a desirable investment by, even small manufacturers.

Fell & Lovatt, Crawfordsville, Ind., have opened a new Hardware, Sporting Goods and Cutlery store.

A TWO-STORY STEEL RACK.

THE CONGDON & CARPENTER COMPANY, Providence, R. I., has recently increased its business facilities by the addition of an adjoining building on Canal street, having two fronts. It has four stories and basement, with 40 ft. frontage on Canal street and a depth of 90 feet, the increased space being utilized principally for the more expeditious handling of the iron and steel portion of the business.

A part of the equipment, as here illustrated, is a capacious rack for carrying steel bars, but equally serviceable for any kindred material, such as tubes, rods, &c. The rack is buried to the extent of 6 in. in the cement floor of the basement. A plate of steel 1 x 6 in. runs crosswise of the rack under each upright, all of the many uprights extending upward through the main floor above and anchored to the under portion of the second floor, thus providing large bin capacity, accessible on two floors.

Fig. 1.—Upper Portion of Steel Rack as Seen from Street Floor.

Fig. 2.—Lower Portion of Rack in Basement.

There are separate places for 120 different kinds and sizes of bars or rods in the basement portion, and 165 spaces on the street floor above, the openings of which are principally 12 in. wide and 10 in. high, but for smaller stock there are 44 bins 6 in. wide and 10 in. high. In building this rack, which is of exceptionally solid character to hold great weight, steel bars ½ x 4 in. were used, with ⅞-in. round rods run laterally. There is a division in every third rack, which has a separator of 1¼-in. extra heavy pipe to give increased rigidity and stability. In depth the rack is 20 ft. from front to back, and is electrically lighted at both ends for convenience in storing or getting out material. Near by there has been installed a Nutter & Barnes sawing off machine, for the quick cutting of material to length in accordance with specifications and with square ends up to 6 in. in diameter. This machine is operated by an electric motor on top of the machine. There is also an overhead crane, which transports heavy bars directly from the street to the machine. This is a trolleylike arrangement, running on an I-beam and equipped with a chain hoist.

The company now carries its stock of Nails, Horseshoes, Toe Calks and Blacksmiths' Supplies on the main floor to expedite the handling of an important department of its business. The main building, which the addition adjoins, has a frontage on two streets, with a side street running its entire length, while opposite and across the side street is a warehouse two stories high and 50 ft. long, in which is stored White Lead, Oil and Turpentine. The main buildings occupy the larger part of the entire square, the stock carried consisting largely of Harness, Iron and Steel, Carriage Woodwork, Carriage and Heavy Hardware, Paints, Oils and Varnishes, Horse Clothing, Carriage Trimmings, Tinsmiths', Blacksmiths' and Machinists' Supplies, Sheet Iron, Tin Plate and metals. There is an electric crane in the rear for handling heavy shafting.

This business was established some time previous to 1790, the exact date not being known. A large branch has been located at Fall River, Mass., since January 1, 1874. Just how old the business actually is, is somewhat uncertain, but in the office in Providence hangs a portion of the United States *Chronicle*, dated "Providence, 12th of fifth month, 1790," bearing the signature of Joseph Congdon, greatgrandfather of the John H. Congdon the present vice-president of the company. The body of the advertisement reads as follows: "Lately come to hand and now for sale a quantity of iron stock for the use of forges, amongst which is a large proportion of iron suitable for the blacksmith business." Another branch of the business was established in Bridgeport, Conn., in 1887, but it was afterward sold to some of the employees.

Price-Lists, Circulars, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

BARNEY & BERRY, Springfield, Mass.: Illustrated booklet referring to Ice Planers for maintaining a smooth skating surface.

CLEVELAND LOCK COMPANY, Cleveland, Ohio: Illustrated price-list No. 16, referring to Hasp Locks, Corn Huskers, Spring, Strap and T Hinges, Wire Scoops, Steel Shelf Brackets, Miners' Candlesticks, Lawn Sprinklers and Square Auger Bits.

GRAND RAPIDS HARDWARE COMPANY, Grand Rapids, Mich.: Illustrated catalogue of patent all steel Sash Pulleys.

N. R. DAVIS & SONS, Assonet, Mass.: Illustrated booklet referring to Davis Guns, with price-list of parts.

WEEKS SCALE WORKS, Buffalo, N. Y.: Illustrated catalogue No. 30, referring to Scales of various kinds and to Trucks.

OWEN WALSH MFG. COMPANY, 78-80 Barclay street, New York: Illustrated catalogues No. 9 and 10, referring to Portables, Brackets, Gas, Electric and Combination Fixtures, Lighting Specialties, Speaking Tube Materials and Electric Push Buttons.

M. B. SCHENCK COMPANY, Meriden, Conn.: Illustrated catalogue covering an extensive line of Casters, including new price-list dated January 1, 1908.

FULTON MACHINE & VISE COMPANY, Lowville, N. Y., Surpless, Dunn & Co., 74-76 Murray street, New York, sales agents: Illustrated catalogue E, referring to Vises.

Requests for Catalogues, Etc.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM A. A. CAVINES, who has engaged in the Hardware business at Cambridge, Idaho.

FROM ROSHOLT HARDWARE COMPANY, Edmore, N. D., whose store was recently damaged by fire to the extent of $13,000, fully covered by insurance. The company handles Shelf and Heavy Hardware, Stoves, Tinware, Paints and Sporting Goods.

FROM WENK & Co., who have succeeded Wenk & Hoesley in the Hardware and Furniture business in Leigh, Neb.

FROM BLAKELY & SON, who have purchased the business of G. W. Bowersox in Cambria, Mich., handling Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Sporting Goods, &c.

FROM LONGMONT HARDWARE COMPANY, Longmont, Colo., handling Shelf and Heavy Hardware, Stoves, Tinware, &c.

FROM J. R. NAGEL HARDWARE COMPANY, which has succeeded J. R. Nagel & Son, in Cuero, Texas. In the newly organized corporation the stockholders are the sons of the late J. R. Nagel, who established the business in 1871. The company has a paid up capital of $10,000, and the business will be under practically the same management as during the past 10 years since the death of the founder, in 1897.

FROM GEO. W. DRULINER, who has purchased the business of W. R. Barger in Benkelman, Neb., and is handling Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting and Athletic Goods.

FROM C. E. SHAVER, who has purchased the Hardware, Stove, Implement, Paint and Sporting Goods business of Richards Hardware Company, Sugar City, Colo.

FROM SRSEN SUPPLY COMPANY, Owatonna, Minn., which has opened a new store and will transact a general Hardware business.

HARRY PARDON BROWNELL, vice-president of the Aspinwall Hardware Company, Providence, R. I., died by accident December 31, aged 33 years. He was a native of Little Compton, R. I., and went to Providence about 16 years ago, entering the employ of Belcher & Loomis, Hardware merchants, and remained with them until August, 1906, when he bought the interest held by W. A. Bosworth in the firm of Bosworth & Aspinwall. The business was reorganized as the Aspinwall Hardware Company, with Charles W. Aspinwall, who had been the junior partner, as president, and Mr. Brownell as vice-president. The latter's specialty was Builders' Hardware. He was a Mason and an Odd Fellow.

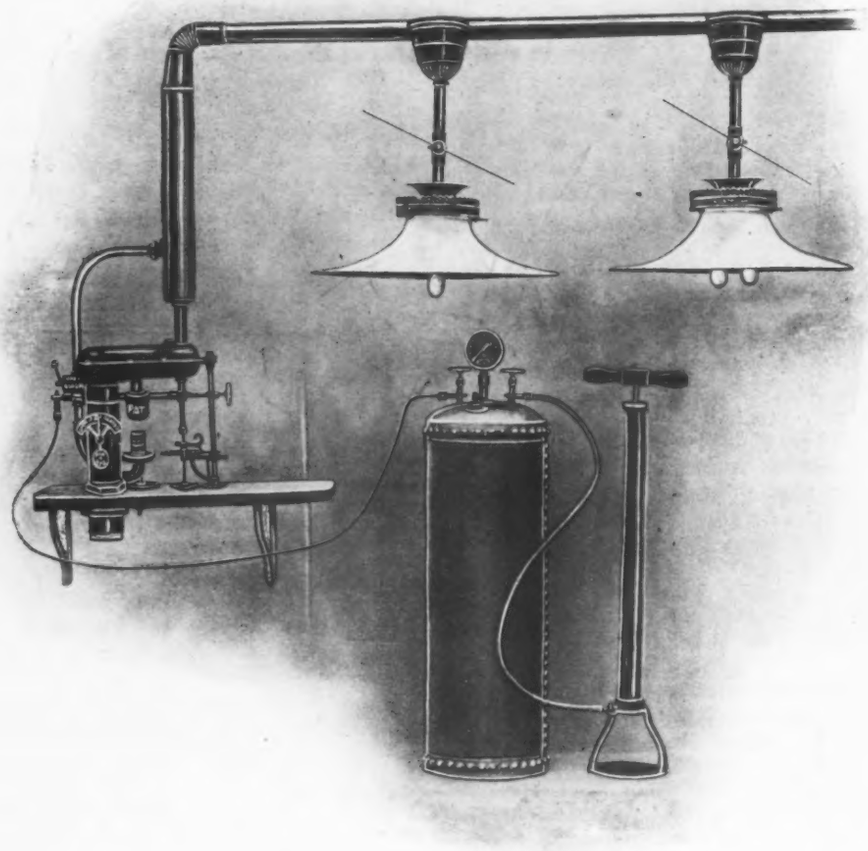
ANTON PETERSON, Stockholm, Wis., has removed his Hardware, Implement and Furniture stock to a new building.

BUTLER BROTHERS' ST. LOUIS BUILDING.

BUTLER BROTHERS, Chicago, announce that their St. Louis branch is now fully established in the splendid new building which has been constructed for it. It occupies the entire block bounded by Seventeenth, Eighteenth, Olive and Locust streets, and is only three blocks from the Union Station. The building is of reinforced concrete construction, and is said to be the largest structure of this kind in the world. Statistics of its size, floor space and the material used in its erection form an imposing array of figures. Architecturally, it is massive and dignified, and every provision is made for the expeditious loading and unloading of freight, and conducting all departments of the business in the most economical and efficient manner. Work on the building was begun in September, 1906, and it was finished in November last, when the work of installing fixtures and removing stock was begun, and only recently concluded.

The Little Giant Gas Machine.

The Little Giant gas machine herewith illustrated is manufactured by the American Self-Lighting Lamp Company, Peoria, Ill., and is designed to furnish illumination for dwellings, stores, halls and other buildings. The mechanism comprised in the generating apparatus is simple, and its parts are easily accessible for cleaning and replacement. It will be observed that the generator is of the overhead type, being fed from above, so that the full effects of the rising heat are obtained. It is also claimed that the generation of gas is economically accomplished by a small subflame to feed which but little oil is required. Air is supplied under pressure from a cold tank system, and is controlled by a regulating device having an indicator attachment, which shows the position of the admission ports. The flame is also regulated by an adjusting mechanism, and the number of lights of the system is indicated by a registering dial. Provision is made to keep dust from mixing with the gas, and a heating damper prevents the heated gas from condensing in the pipes. If it is desired the gasoline supply tank may be placed at any point outside of the building, although it is claimed that it may be operated safely on the inside. The accompanying illustration represents the system connected with the latest improved mantle fixtures with a drop light.



The Little Giant Gas Machine.

The Bull Terrier Wrench.

The Whitman & Barnes Mfg. Company, Chicago, Ill., has recently added to its line the wrench herewith illustrated. The small end of the wrench will hold pipe ⅛ to ¼ in., inclusive, and round iron ¼ to 9-16 in., inclusive. The large end will hold pipe ⅛ to ⅜ in., inclusive, and round iron ¼ to ¾ in., inclusive. The wrench is 5¾ in. long, having hardened and tempered jaws. The entire tool is highly polished, and each one is wrapped in oiled paper, inclosed in an envelope and packed six in a neat pasteboard box.

The Bull Terrier Wrench.

Bathroom Fixtures.

The National Mfg. Company, Worcester, Mass., has added to its product a full line of nickel plated bathroom fixtures, supplementing a line of the same class of goods of the cheaper grades.

Pressed Steel Factory Equipment.

The Kilbourne & Jacobs Mfg. Company, Columbus, Ohio, is offering a line of steel factory equipment, including pressed steel pans, riveted tote boxes, steel barrels, &c. The line, several selections from which are illustrated herewith, is designed with a view to economizing time and labor in the production and storage departments of factories. Fig. 1 illustrates a pan offered for the use of manufacturers of electrical and other instruments suitable for handling or storing parts of electrical instruments, typewriters, adding machines, sewing machines, clocks, watches, &c. The pan has flat steel handles, and is made perfectly smooth on the inside without seams or rivets. It is pressed from No. 16 gauge steel, but can be made of heavier or lighter stock, as desired. It is 13¾ in. wide, 21½ in. long, 5¾ in. deep and weighs 9 lb. It is offered plain, painted or galvanized. In Fig. 2 are shown pans or baskets for foundries, factories, excavating work, &c. They have rolled flanges with concave bottoms, and are especially adapted to carrying ore, earth or other material in mines and smelters, and for use in excavating where labor conditions make it undesirable to use larger receptacles. They are also suitable for handling small castings, valves, washers, &c., in factories and foundries. They are easily cleaned, having no corners or joints, and when partially filled with sawdust or ashes are said to make sanitary cuspidors. Steel barrels with corrugated bottoms designed for handling castings, parts of valves or heavy materials are shown in Fig. 3. They can be equipped with false wood bottoms or double steel bottoms. They are 18 in. in diameter and 28 in. deep. The shells are made from a single sheet of No. 16 gauge steel, and the bottoms are stamped from a single sheet forming a flange 1 in. deep, which is riveted to the shell. The barrels are bound at the top with 1½ x ⅜ in. steel, and are painted black outside. They can be made water tight if desired.

Fig. 1.—Pressed Steel Pan.

Fig. 2.—Foundry Pans or Ore Baskets.

Fig. 3.—Steel Barrels.

Knapp Electric & Novelty Company.

Knapp Electric & Novelty Company, 511-513 West Fifty-first street, New York, manufacturer of battery motors, electrical toys and specialties, has recently added to its line a series of new motors and dynamos, including several types, listing from numbers 120 to 130. These little motors are models of larger machines, and are entirely practical and efficient for teaching the theory and practice of electrical power. The company has issued a booklet briefly stating the elementary principles of electricity and giving directions for winding and assembling its type S and type H motors. Accompanying it are illustrated price-lists, with some detailed descriptions of the machines.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	₱ gal.
Linseed, State and Western, raw	42 @43
City, Boiled	45 @46
City, Raw	44 @45
Raw, Calcutta, in bbls	70 @..
Lard, Extra Prime, Winter	73 @76
Extra No. 1	53 @56
No. 1	49 @52
Cotton-seed, Crude, f.o.b. mill	28½@29
Summer Yellow, prime	37½@37¾
Summer White	@39½
Yellow Winter	@46
Sperm, Crude	59 @60
Natural Winter	72 @74
Bleached Winter	75 @76
Bleached Winter, Extra	@..
Tallow, Prime	59 @60
Whale, Crude	35 @36
Natural Winter	46 @48
Bleached Winter	49 @51
Extra Bleached Winter	52 @54
Menhaden, Brown, Strained	41 @42
Light Strained	41 @42
Northern	@..
Southern	37 @..
Cocoanut, Ceylon ₱ lb	6¾@ 7
Cochin ₱ lb	8¾@..
Cod, Domestic, Prime	42 @44
Newfoundland	44 @46
Red, Elaine	42 @44
Saponified ₱ lb	5¾@..
Olive, Yellow	68 @70
Neatsfoot, Prime	55 @58
Palm, Lagos ₱ lb	6½@ 6½

Mineral Oils—

	₱ gal.
Black, 29 gravity, 25@30 cold test	13 @13½
29 gravity, 15 cold test	13½@14
Summer	12½@13
Cylinder, light filtered	20½@21
Dark, filtered	18 @19
Paraffine, 903-907 sp. gravity	14½@15
903 sp. gravity	13½@14
883 sp. gravity	11 @11½
Red	13½@14

Miscellaneous—

Barytes:	
White, Foreign ₱ ton	$18.50@20.50
Amer. floated ₱ ton	19.00@20.00
Off color ₱ ton	13.00@16.50
Chalk, in bulk ₱ ton	3.00@ 3.25
In bbls ₱ 100 lb	..@ 35
China Clay, Imported ₱ ton	11.50@18.00
Cobalt, Oxide ₱ 100 lb	2.50@ 2.60
Whiting, Commercial ₱ 100 lb	.43@ .52
Gilders ₱ 100 lb	.55@ .60
Ex. Gilders ₱ 100 lb	.60@ .65

Putty, Commercial—₱ 100 lb

In bladders	$1.70 @1.85
In bbls. or tubs	1.20 @1.45
In 1 lb to 5 lb cans	2.65 @2.95
In 12½ to 50 lb cans	1.50 @1.90

Spirits Turpentine—₱ gal.

In Oil bbls	45½@46
In machine bbls	46 @46½

Glue—₱ lb

Cabinet	12 @15
Common Bone	7½@ 9
Extra White	18 @24
Foot Stock, White	12 @14
Foot Stock, Brown	9 @11
German Hide	12 @18
French	10 @40
Irish	13 @16
Low Grade	10 @12
Medium White	14 @17

Gum Shellac—₱ lb

Bleached, Commercial	27 @28
Bone Dry	33 @35
Button	40 @50
Diamond I	48 @49
Fine Orange	30 @35
A. C. Garnet	30 @35
G. A. L.	25 @26
Kala Button	20 @22
D. C.	50 @51
Octagon B	51 @52
T. S.	26 @27
V. S. O.	48 @49

Colors in Oil—₱ lb

Black, Lampblack	12 @14
Blue, Chinese	36 @46
Blue, Prussian	32 @36
Blue, Ultramarine	13 @16
Brown, Vandyke	11 @14
Green, Chrome	12 @16
Green, Paris	@24
Sienna, Raw	12 @15
Sienna, Burnt	12 @15
Umber, Raw	11 @14
Umber, Burnt	11 @14

White Lead, Zinc, &c.—₱ lb

Lead, English white, in Oil	10¼@10¾
Lead, American White:	
Lots of 500 lb or over, in Oil	@ 6¾
Lots less than 500 lb, in Oil	@ 7¼
Lead, White, in oil, 25 lb tin pails	@ 7¼
Lead, White, in oil, 12½ lb tin pails	@ 7¾
Lead, White, in oil, 1 to 5 lb assorted tins	@ 8¾
Lead, American. Terms: On lots of 200 lbs. and over 2% for cash if paid in 15 days from date of invoice.	
Zinc, American, dry ₱ lb	5½@ 5¾
Zinc, French:	
Antwerp, Red Seal, dry	8¼
Antwerp, Green Seal, dry	10½
Paris, Red Seal, dry	8¾
Paris, Green Seal, dry	10¾
Zinc, V. M. French, in Poppy Oil: Green Seal:	
Lots of 1 ton and over	12¾@13¾
Lots of less than 1 ton	13¾@13¾
Zinc, V. M. French, in Poppy Oil: Red Seal:	
Lots of 1 ton and over	11¾@11¾
Lots of less than 1 ton	11¾@12¼

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors—₱ lb

Black, Carbon	6½@10
Black Drop, American	3½@ 8
Black Drop, English	5 @15
Black, Ivory	16 @20
Lamp, commercial	4 @ 6
Blue, Celestial	4 @ 6
Blue, Chinese	31 @33
Blue, Prussian	29 @31
Blue, Ultramarine	3½@15
Brown, Spanish	½@ 1
Carmine, No. 40	$3.10@3.25
Green, Chrome, ordinary	3½@ 5
Green, Chrome, pure	17 @25
Lead, Red, bbls., ½ bbls., kegs.	@ 6¾
Litharge, bbls., ½ bbls., kegs.	@ 6¾
Ocher, American ₱ ton	$8.50@16.00
American Golden	2½@ 3¼
French	1¾@ 2
Foreign Golden	3 @ 4
Orange Mineral, English	10 @12
French	11¾@12
German	10 @12
American	8½@ 8¾
Red, Indian, English	4½@ 6
American	3 @ 3¼
Red, Turkey, Eng'lish	4 @10
Red, Tuscan, English	7 @10
Red, Venetian, Amer. ₱ 100 lb	$0.50@1.25
English ₱ 100 lb	$1.15@1.60
Sienna, Italian, Burnt and Powdered	3 @ 9
Italian, Raw, Powdered	3 @ 7
American, Raw	1¼@ 2
American Burnt and Pow'd.	1¼@ 2
Talc, French ₱ ton	$18.00@25.00
American ₱ ton	15.00@25.00
Terra Alba, French ₱ 100 lb	.90@ 1.00
English ₱ 100 lb	.80@ 1.00
American ₱ 100 lb, No. 1	.75@ .80
America ₱ 100 lb, No. 2	.60@ .65
Umber, Turk. Bt. & Pow.	2 @ 3¼
Turkey, Raw and Powdered	2¼@ 3½
Burnt, American	1½@ 2
Raw, American	1½@ 2
Yellow Chrome, Pure	13 @15
Vermilion, American Lead	7 @25
Quicksilver, bulk	65 @..
Quicksilver, bags	@65
English, Imported	65 @70
Chinese	$0.90@1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—
Columbian and Domestic....33⅓%
North's 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—
Ives' Patent....35%
Taplin's Perfection....35%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anti-Rattlers—
Fernald Mfg. Co. Burton Anti-Rattlers, ₱ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ₱ doz. pairs ....$2.00@$3.00

Anvils—American—
Eagle Anvils....₱ lb @8½¢
Hay-Budden, Wrought....9½@9¾¢
Trenton ....₱ lb 9½@9¾¢

Imported—
Peter Wright & Sons, ₱ lb, 84 to 340 lb, 11¢; 350 to 600 lb, 11½¢.

Anvil, Vise and Drill—
Millers Falls Co., $18.00....15&10%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—
Livingston Nail Co....10%

Augers and Bits—
Com. Double Spur....75@80%
Jennings' Patn., Bright.65&10@70%
Black Lip or Blued...65@65&5%
Boring Mach. Augers....70%
Car Bits, 12-in. twist....40&10%
Ford's Auger and Car Bits....40&5%
Ft. Washington Auger Co., Conard's 35%
Forstner Pat. Auger Bits....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list, 25&7½%
No. 30, R. Jennings' list....50%
Russell Jennings'....25&10&2½%
L'Hommedieu Car Bits....15%
Mayhew's Countersink Bits....45%
Pugh's Black....20%
Pugh's Jennings' Pattern....35%
Snell's Auger Bits....60%
Snell's Bell Hangers' Bits....60%
Snell's Car Bits, 12-in. twist....60%
Snell's King Auger Bits....50%
Wright's Jennings' Bits....50%

Bit Stock Drills—See *Drills, Twist.*

Expansive Bits—
Clark's Pattern, No. 1, ₱ doz. $26; No. 2, $18....60&10%
Ford's, Clark's Pattern....66⅔&5%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00....60&10%
Swan's 60%

Gimlet Bits—
Per gro.
Common Dble. Cut....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75

Hollow Augers—
Bonney Pat., per doz..$6.50@7.00
Ames ....25&10%
Universal 20%

Ship Augers and Bits—
Ship Augers....40&10%
Ford's ....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's 6%
Watrous' ....33⅓&7½%
Snell's 40%

Awl Hafts—See *Handles, Mechanics' Tool.*

Awls—
Brad Awls:
Handled ....gro. $2.75@3.00
Unhdled, Shldered...gro.63@66¢
Unhandled, Patent..gro.66@70¢
Peg Awls:
Unhandled, Patent..gro. $1@1¼¢
Unhdled, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket..gro.$11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—
Single Bit, base weights: Per doz.
First Quality....$4.75@5.00
Second Quality....$4.25@4.50
Double Bit, base weights:
First Quality....$7.00@7.50
Second Quality....$6.50@6.75

Axle Grease—See *Grease, Axle*

Axles—*Iron or Steel*
Concord, Loose Collar..4½@5 ¢
Concord, Solid Collar...4¾@5¼¢
No. 1 Common, Loose....3¾@4¼¢
No. 1½ Com., New Style..4½@5 ¢
No. 2 Solid Collar....4½@5 ¢
Half Patent:
Nos. 7, 8, 11 and 12..65@65&10%
Nos. 13 to 14....65@65&10%
Nos. 15 to 18....70@70&10%
Nos. 19 to 22....70@70&10%

Boxes, Axle—
Common and Concord, not turned lb., 5@6¢
Common and Concord, turned. lb., 6@7¢
Half Patent....lb., 9½@10¢

Bait—Fishing—
Hendryx:
A Bait....20%
B Bait....25%
Competitor Bait....20&5%

Balances—Sash—
Caldwell new list....50%
Pullman ....50&10@60%

Spring—
Spring Balances....50&10@60%
Chatillon's:
Light Spg. Balances....50@50&10%
Straight Balances....40@40&10%
Circular Balances....50&10%
Large Dial....30%

Barb Wire—See *Wire, Barb.*

Bars—Crow—
Steel Crowbars, 10 to 40 lb.... per lb., —@2½@2¾¢

Towel
No. 10 Ideal, Nickel Plate..₱ gro. $8.50

Beams, Scale—
Scale Beams....40%
Chattillon's No. 1....30%
Chattillon's No. 2....40%

Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ₱ doz. $0.80; Tinned $0.85
No. 11 Wire Coppered ₱ doz. $1.15; Tinned $1.20
No. 10 Wire Tinned....₱ doz. $1.50

Beaters, Egg—
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.
Turner & Seymour Mfg. Co.:
T. & S. Dover....$6.50

Bellows—
Blacksmith, Standard List..
Split Leather....60&10@65%
Grain Leather....50@50&10%

Hand—
Net Prices.

Inch..	6	7	8	9	10
Doz..	$5.00	5.50	6.00	6.50	7.50

Molders—
Net Prices.

Inch..	10	12	14	16
Doz..	$7.50	9.00	12.00	15.00

Bells—Cow—
Ordinary Goods...75&5@75&10&5%
High grade....70&10@75%
Jersey ....75&10%
Texas Star....50%

Door—
Home, R. & E. Mfg. Co.'s....55&10%

Hand—
Polished, Brass....50&10@60%
White Metal....50&10@50&10&5%
Nickel Plated....50&5%
Swiss ....50&5%
Coue's Globe Hand Bells....33⅓@35%

Miscellaneous—
Farm Bells....lb., 2¼@2½¢
Church and School....60@60&5%

Belting—Leather—
Extra Heavy, Short Lap..60&5%
Regular Short Lap....60&10&5%
Standard ....70&5%
Light Standard....75%
Cut Leather Lacing....40&10%
Leather Lacing Sides, per sq. ft. 2½½¢

Rubber—
Agricultural (Low Grade).... 75@75&5%
Common Standard....70@70&10%
Standard ....70@70&5%
Extra ....60&5@60&10%
High Grade....50&5@50&10%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—
Green River Tire Benders and Upsetters 20%

Bicycle Goods—
John S. Leng's Son & Co.'s 1907 list: Chain, Parts, Spokes....50%
Tubes 60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks—Tackle—
Common Wooden....75%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%;
Lane's Patent Automatic Lock and Junior 30%
See also Machines, Hoisting.

Boards, Stove—
Paper and Wood Lined....40%
Embossed 50%

Boards, Wash—See *Washboards.*

Bobs, Plumb—
Keuffel & Esser Co....33⅓%

Bolts—

Carriage, Machine, &c.—
Common Carriage (cut thread):
⅜ × 6 and smaller..70&5@—%
Larger and longer....65@—%
Phila. Eagle, $3.00 list...80@—%
Bolt Ends....65&5@—%
Machine (Cut Thread):
⅜ × 4 and smaller..70&7½@—%
Larger and longer...65&5@—%

Door and Shutter—
Cast Iron Barrel, Japanned, Round Brass Knob:

Inch	3	4	5	6	8
Per doz.	$0.30	.35	.45	.60	.80

Cast Iron Spring Foot, Jap'd:

Inch	6	8	10
Per doz	$1.20	1.50	2.25

Cast Iron Chain, Flat, Japanned:

Inch	6	8	10
Per doz	$1.00	1.40	1.65

Cast Iron Flat Shutter, Jap'd., Brass Knobs:

Inch	6	8	10
Per doz	$0.75	.85	1.25

Wrought Barrel Japd..80@80&10%
Barrel Bronzed....60&10%
Spring ....70&10@70&10&10%
Shutter ....50&5@50&10&5%
Square Neck....75@75&10%
Square ....70&10@10%
Ives' Patent Door....55%
Ives' Wrought Metal....45%

Expansion—
Richards Mfg. Co....50&10%

Plow and Stove—
Plow ....65&5@—%
Stove ....85@85&5%

Tire—
Common Iron....80%
Norway Iron....80%
American Screw Company:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Bay State, list Dec. 28, '99....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Eclipse, list Dec. 28, '99....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99....80%
Norway Phila., list Oct., '84....80%
Eagle 82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila. Eagle, list Oct. 16,1884..82½%
Upson Nut Co.:
Tire Bolts....73½%

Borers, Bung—
Borers Bung, Ring, with Handle:

Inch.....	1¼	1½	1¾	2
Per doz....	$4.80	5.60	6.40	8.00
Inch	2¼	2½		
Per doz	$8.65	11.50		

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each....25%

Boxes, Mitre—
C. E. Jennings & Co....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme ....15&10%
Perfection 40%
Seavey 45%

Braces—
Common Ball, American....$1.50
Barber's ....50&10&10@60&10%
Fray's Genuine Spofford's....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414 ....60%
C. E. Jennings & Co....50&5%
Mayhew's Ratchet....60%
Mayhew's Quick Action Hay Pa...50%
Millers Falls Drill Braces....25&10%
P., S. & W. Co., Peck's Pat..60&10%

Brackets—
Wrought Steel....70&10@75&10%
Bradley Metal Clasp..80&10@80&10&5%
Griffin's Pressed Steel....75@75&10%
Griffin's Folding Brackets....70&10%
Taplin Victor Handy Egg Beater Bracket ....₱ doz. $1.50

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—
Kilbourne Mfg. Co....75&20%
Wire Goods Co....75%

Buckets, Galvanized—
M'f'gr's list, price per gross.

Quart	10	12	14	
Water, Reg	25.35	28.00	32.00	10&5%
Water, Hvy	45.35	48.00	52.00	
Fire, Rd. Btm	32.00	34.65	38.65	
Well	37.35	41.35	45.35	

Bull Rings—See *Rings, Bull*

Butts—Brass—
Wrought, High List, Oct. 26,'06..55%
Cast Brass, Tiebout's....40%

Cast Iron—
Fast Joint, Broad....40&10@50%
Fast Joint, Narrow...40&10@50%
Loose Joint....70&10@75%
Loose Pin....70&10@75%
Mayer's Hinges....70@70&5
Parliament Butts....70@70&5

Wrought Steel—
Extra 10@—

	Bright.
Light Narrow, Light Reversible	70&5%
Reversible and Broad	70&5%
Loose Joint, Narrow, Light Inside Blind, &c.	70%
Back Flaps, Table Chest	65%
	Japanned.
Light Narrow, Loose Pin.	40&5%
Light Narrow, Ball Tip	60%
Broad	40&5%
Steeple Tipped	70%
Ball Tipped	70%

Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze; Series 700, 800..30%
Hendryx Enameled..... 35%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong, per lb., 4¼@4¾¢
Sharp, 1 prong, per lb., 4¾@5¼¢
Burke's, Blunt 4@4¾¢; Sharp, 4½@5¼¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

Can Openers—

See *Openers, Can.*

Caps, Percussion—

Eley's E. B.....52@55¢
G. D.....*per M* 34@35¢
F. L.....*per M* 40@42¢
G. E.....*per M* 48@50¢
Musket.....*per M* 62@63¢

Primers—

Berdan Primers, $2 per M..20&5%
Primer Shells and Bullets..15&10%
All other primers per M.$1.52@1.60

Carpet Stretchers—

See *Stretchers, Carpet.*

Cartridges—

Blank Cartridges:

32 C. F., $5.50.....10&5%
38 C. F., $7.00.....10&5%
22 cal. Rim, $1.50.....10&5%
32 cal. Rim, $2.75.....10&5%
B. B. Caps, Con. Ball, Swgd. $1.90
B. B. Caps, Round Ball....$1.49
Central Fire.....25%
Target and Sporting Rifle..15&5%
Primed Shells and Bullets.15&10%
Rim Fire, Sporting.....50%
Rim Fire, Military.....15&5%

Casters—

Bed.....65&10%
Plate.....60&5%
Philadelphia.....70&10%
Acme, Ball Bearing.....35%
Gem (Roller Bearing).....70&10&5%
Steel Gem.....20%
Standard Ball Bearing.....45%
Yale (Double Wheel) low list..40&10%

Cattle Leaders—

See *Leaders, Cattle.*

Chain, Proof Coil—

American Coil, Straight Link:

5-16	¼	5-16	⅜	7-16	½	9-16
$8.77	6.17	5.02	4.57	4.37	4.27	4.22
⅝		¾	⅞ to 1	1⅛ to 1¼ inch.		
$4.17		4.07	4.02	4.12		

In cask lots, deduct 25¢.

German Coil:
6-0 to 1.....70&5@70&10%
2 and 3..60&10&10@60&10&10&5%
4, 5 and 6.....50&10@50&10&5%

Halter—

Halter Chains.....60@60&5%
German Pattern Halter Chains, list July 24, '97.....60&10&5%
Covert Mfg. Co. Halter ..... 35&5%

Cow Ties—

See *Halters and Ties.*

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6½—6-3, Straight, with ring.$28.00
6½—6-2, Straight, with ring.$29.00
6½—6-2, Straight, with ring.$32.00
6½—10-2, Straight, with ring.$37.00

NOTE.—Add 2c per pair for Hooks. Twist Traces; add per pair for Nos 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.

Eastern Standard Traces, Wagon Chain, &c..60&10@60&10&5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron.....60&10%
Brass.....60%
Safety and Plumbers' Chain, 60&10%
Gal. Pump Chain....*lb*.4½@4¾%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion 40%
Oneida Community:
American Halter, Dog and Kennel Chains ..... 35&2½@40%
Niagara Dog Leads and Kennel Chains ..... 45@60&5%
Wire Goods Co.:
Dog Chain..... 70%
Universal Dbl. Jointed Chain..... 50%

Chain and Ribbon, Sash—

Oneida Community:
Steel Chain..... 60%
Pullman:
Bronze Chain, 60%; Steel Chain, 60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft..... $1.25@$3.00
Sash Ribbon Attachments, per set..8¢

Chalk—(From Jobbers.)

Carpenters' Blue....*gro.*, 50@55¢
Carpenters' Red.....*gro.*, 45@50¢
Carpenters' White...*gro.*, 40@45¢

Checks, Door—

Bardsley's 45%
Pullman, per gro..... $54.00
Russwin 33⅓%

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools..... 50%
Youths' Chests, with Tools..... 25%
Gentlemen's Chests, with Tools..25%
Farmers', Carpenters,' etc., Chests, with Tools..... 20%
Machinists' and Pipe Fitters' Chests, Empty..... 45%
Tool Cabinets..... 45%
C. E. Jennings & Co.'s Machinists' Tool Chests..... 7½%

Chisels—

Socket Framing and Firmer

Standard List.....75&10@—%
Buck Bros..... 30%
C. E. Jennings & Co.:
Socket Firmer No. 10..... 25&7½%
Socket Framing No. 15..... 25&7½%
Swan's ..... 66⅔&70%
L. & I. J. White Co..... 30@30&5%

Tanged—

Tanged Firmers.....30&5@35%
Buck Bros..... 30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co..... 25&5%

Cold—*lb.*

Cold Chisels, good quality..18@15¢
Cold Chisels, fair quality..11@12¢
Cold Chisels, ordinary... 9@10¢

Chucks—

Almond Drill Chucks..... 35%
Almond Turret Six-Tool Chuck.....40%
Beach Pat., each $8.00..... 35&5%
Empire 25%
Blacksmiths' 25%
Jacobs' Drill Chucks..... 35%
Pratt's Positive Drive..... 25%
Skinner Patent Chucks:
Independent Lathe Chucks..... 35%
Universal, Reversible Jaws..... 35%
Combination, Reversible Jaws..35%
Drill Chucks, New Model, 25%; Standard, 45%; Skinner Pat., 25%; Positive Drive..... 40%
Planer Chucks..... 20%
Face Plate Jaws..... 35%
Standard Tool Co.:
Improved Drill Chuck..... 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21..... 35%
Scroll Combination, Nos. 83 and 84 ..... 30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318..35%
Independent Steel, No. 64..... 25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104..... 35%
Union Czar Drill..... 25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal, No. 42..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50..... 35%
Steel Face Plate Jaws, Nos. 70 and 72 ..... 30%
Westcott Patent Chucks:
Lathe Chucks..... 50%
Little Giant Auxiliary Drill..... 50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved..... 50%
Oneida Drill..... 50%
Scroll Combination Lathe..... 50%

Clamps—

Adjustable, Hammers'.....20@20&5%
Carriage Makers', P., S. & W. Co. ..... 50&10%
Besly, Parallel..... 33⅓&10%
Myers' Hay Rack..... 45%
Lineman's Swedish Neverturn..... 65%
Wood Workers, Hammers'.....40&10%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain—

Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary..... 40%

Sidewalk—

Star Socket, All Steel..℔ doz. $4.05 net
Star Shank, All Steel..℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—

Foster Bros..... 30%
Fayette R. Plumb..... 30%
L. & I. J. White Co..... 30%

Clippers, Horse and Sheep—

Chicago Flexible Shaft Company:
1902 Chicago Horse, each..$10.75
20th Century Horse, each..$5.00
Lightning Belt Horse, each..$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Horse, each..... $8.75
Stewart's Patent Sheep Shearing Machine, each..... $12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75

Clips, Axle—

Regular Styles, list July 1, '05, 80&40&10%

Cloth and Netting, Wire—See *Wire, &c.*

Cocks, Brass—

Hardware list:
Plain Ribbs, Globe, Kerosene, Racking, Liquor, Bottling, &c. ..... 70@—%
Compression Ribbs..60&10@—%

Coffee Mills—

See *Mills, Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list..... 40%
Leather, Walter B. Stevens & Son's list 40%

Compasses, Dividers, &c.

Ordinary Goods.....70&10@75%
Wm. Schollhorn Co.:
Excelsior Dividers..... 60%
Lodi Dividers..... 70&10%

Conductor Pipe,—

L. C. L. to Dealers:

	Galvanized		
	Galv. Steel.	*Charcoal Iron.*	*Copper. 14, 16&20 oz.*
Eastern:			
70%	50&17½%		45%
Central:			
70&5%	55%		45%
Western and Southern:			
65&10%	50&2½%		40&5%
So. Western			
65&5%	45&5%		40&2½%

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

L. & G. Mfg. Co.:

Gal.	2	3	4	6	8
Galvanized, ea	$1.85	$2.00	$2.25	$2.90	$3.90
Galvanized, Lined, side handles, Gal.	2	3	4	6	8
Each	$1.95	$2.15	$2.40	$3.30	$4.15

White Enameled..... 10%
Agate Lined..... 10%

Coopers' Tools—See *Tools, Coopers'.*

Coppers' Soldering—

Soldering Coppers, 3 lbs. to pair and heavier, 24@27¢; lighter than 3 lb. to pair.....26@29¢

Cord—Sash—

Braided, Drab.....*lb.* 35¢
Braided, White, Com., Nos. 8 to 12, 23¢; No. 7, 23½¢; No. 6, 24½¢. In lots of 12 doz. or over, 1 cent less per pound.
Cable Laid Italian, lb., No. 18..37¢
Italian, lb., A, No. 18, 25¢; B, $2¢
Common India.....*lb., 11@11½¢*
Cotton Sash Cord, Twisted.18@20¢
Patent Russia.....*lb*...20¢
Cable Laid Russia.....*lb*...21¢
India Hemp, Br'd'd.....*lb*...21¢
India Hemp, Twisted..*lb*.13@14¢
Patent India, Twisted...*lb*...17¢
Pearl Braided cotton, No. 6, ℔ lb. 27½¢; No. 7, 26½¢; Nos. 8 to 12, 26¢
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½¢; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to 10..... ℔ lb 23 ¢
Pullman:
Wire Sash Cord..... 10%
Sash Cord Attachments, per doz.10¢
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord..... 50¢ } 15%
Massachusetts, White....℔ lb 40¢
Massachusetts, Drab....℔ lb 45¢
Phoenix, White, Nos. 8 to 12, 27¢;
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

Wire, Picture—

List July 10, 1906.....90@—%
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord ..... 85&10%

Cradles—

Grain.....40&12½%

Crayons—

White Round Crayons, Cases, 100 gro., $6.50@7.50 at factory, but lower prices made by jobbers
Zelnicker's Lumber. ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.00
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $16.25; Indelibles $18.75
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round. $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16..... $3.00

Crooks, Shepherds'—

Fort Madison, per doz., Heavy, $5.50; Light $5.00

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden..... 50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847..℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor ..... ℔ doz. $3.00
Wm. Rogers & Son..... ℔ doz. $2.50

Cutters—Glass—

H. H. Mayhew Co..... 40%
Red Devil..... 60%
B. Mfg. Co..... 40%
Woodward 50%

Meat and Food—

American 30%

Nos.	401	402	403	404	405	406	407
Each	$5	$7	$10	$12	$25	$50	$60

Enterprise:

Nos.	5	10	12	22	32
Each	$2	$3	$2.75	$4.50	$6

25@25&7½%
No. 202, $1.50..... 40&7½%
P., S. & W. Co.:
Dixon's ..... ℔ doz. 33⅓%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal ..... 40@10&5%
Hales ..... 60&10&5%
Little Giant..... ℔ doz. 40@50%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

New Triumph No. 605, ℔ doz. $24.00, 40&10%
Russwin Food, No. 1, $21.00; No. 2, $27.00 ..... 45&10&10%
$15.00 $18.00
Enterprise Beef Shavers..... 25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters..... 35%
Corn Graters..... 30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater ..... ℔ doz. $4.00

Tobacco—

All Iron, Cheap..*doz.* $4.25@$4.50
Enterprise ..... 25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 ..... 40%

Diggers, Post Hole, &c.—

Disston's:
Rapid, ℔ doz., $24.00..... 25%
Samson, ℔ doz., $34.00..... 25%
Iwan's Imp'ved Post Hole Auger..40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. $8.75
Split Handle Post Hole Diggers, ℔ doz., $7.75
Hercules Pattern, ℔ doz..... $10.00
Kohler's, ℔ doz., Universal, $15.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer..... $7.50
Never-Break Post Hole Diggers, ℔ doz., $24.00..... 60%

Dividers—See *Compasses.*

Drawing Knives—See *Knives, Drawing.*

Dressers, Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

Drills and Drill Stocks—

Blacksmiths' Common Drilling Machines.....$1.50@$1.75
Breast, Millers Falls..... 15&10%
Breast, P., S. & W..... 33⅓%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis..... 25%
Ratchet, Parker's..... 40%
Ratchet, Weston's..... 40%
Ratchet, Weston's, Style H Improved 40%
Ratchet, No. 912..... 40%
Ratchet, Celebrated..... 40%
Ratchet, Whitney's, P., S. & W., 50&5%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00..... 33⅓%

Twist Drills—

Bit Stock.....60&10&10@70%
Taper and Straight Shank.... 60&10@60&10&5%

Drivers, Screw—

Screw Driver Bits, per doz..45@50¢
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 ..... 50%
Buck Bros.' Screw Driver Bits..... 30%
Champion 50%
Disston's 70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet..... 35%
Goodell's Auto..... 65@65&10%
Mayhew's Black Handle..... 40%
Mayhew's Monarch..... 40%
Millers Falls, Nos. 20 and 21 ...25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos. 7565 to 7568, 50%; No. 7540, 40&10%

Eave Trough, Galvanized—

	Territory. Galv. Steel.	*L. C. L. Galvanized Charcoal Iron.*	*Copper. 14, 16&20 oz.*
Eastern:			
75&5%	60&10%		45%
Central:			
75&10%	65%		45%
Western and Southern:			
75%	60&5%		40&5%
So. Western:			
70&10%	55&7½%		42½%

Terms—2% for cash. Factory shipments generally delivered.
See also Conductor Pipe and Elbows

Elbows and Shoes—

Factory shipments, all territories:
Galv. Steel and Galv. C. I. Standard Gauge.....80%
No. 26.....50%
No. 24.....25%
No. 22.....10%
Copper.....50&10%

Elbows, Stove Pipe—

Edwards, Standard Blue.....40&10&10%
Edwards, Royal Blue.....40&10&10%
Reeves, Dover, one piece.....40&10%

Emery, Turkish—

	¼ to ½:	*5½ to 220: Flour.*
Kegs.....*lb.* 5 ¢	5½¢	5½¢
½ Kegs.....*lb.* 5½¢	5¾¢	5¾¢
¼ Kegs.....*lb.* 5¾¢	6 ¢	6 ¢
10-lb. cans, 10 in case....6¼¢	7 ¢	6 ¢
10-lb. cans, less than 10.....10 ¢	10 ¢	8 ¢
Less quantity..10 ¢	10 ¢	8 ¢

NOTE.—In lots 1 to 5 tons a discount of 10% is given.

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's .....50&10%
Walling's .....40&10%
Upson's Patent.....40%

Cord and Weight—
Ives and Titan.....33⅓%

Corrugated—
Acme Corrugated Fasteners.....70%

Faucets—
Cork Lined.....50&10@60%
Metallic Key, Leather Lined, 60&10@70%
Red Cedar.....40&5@40&10&5%
Petroleum.....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star.....60
West Lock.....50&10%
John Sommer's Peerless Tin Key....40
John Sommer's Boss Tin Key.....50
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60
John Sommer's Diamond Lock.....40
John Sommer's I.X.L. Cork Lined...50%
John Sommer's Reliable Cork Lined.. 50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined....50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

Felloe Plates—
See *Plates, Felloe.*

Files— Domestic—
List Nov. 1, 1899.
Best Brands.....70&10@75&10%
Standard Brands.....75&10@80%
Lower Grade...75&10&10@80&10%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....33 1-3@40%

Fixtures, Fire Door—
Allith Underwriters' Approved.....50%
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104.....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—
Net Prices:

Inch	15	17	19	21
Per doz.	$3.60	3.85	4.15	4.65

P., S. & W. Co.....25%
Reading Hardware Co.....60%

Fodder Squeezers—
See *Compressors.*

Forks—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....66⅔%
Champion, Hay.....66⅔%
Champion, Header.....66⅔%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....60%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

Frames— Wood Saw—
White, S'g't Bar, per doz.75@80¢
Red, S'g't Bar, per doz..$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt.	1	2	3	4	6
Each	$1.25	$1.60	$1.90	$2.20	$2.80

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*
Hemp.....$2.75
Cotton.....3.20
Waterproof Sgl. Taped..3.65
Waterproof Dbl. Taped..4.40
Waterproof Tpl. Taped..5.15
} 10&2½%

Gates, Molasses and Oil—
Stebbins' Pattern.....75@80%

Gauges—
Marking, Mortise, &c..50@50&10%
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c..67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....33⅓%

Gimlets— Single Cut—
Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $3.00; 2, $3.30
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $3.30; 2, $3.60

Glass, American Window
See *Trade Report.*

Glasses, Level—
Chapin-Stephens Co.....65@65&10%

Glue, Liquid Fish—
Bottles or Cans, with Brush..25&10@50%
Elwell's.....40%

Grease, Axle—
Common Grade....gro.$6.00@6.50
Dixon's Everlasting, 10-lb pails, ea. 85¢; in boxes, ℔ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

Grinders—
Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00.....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50.....30%

Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ℔ inch, ℔ doz., $2.00.....33⅓%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

Halters and Ties—
Cow Ties.....60&5@60&10%
Covert Mfg. Co.:
Web.....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@60%
Niagara Coil and Halters..45@50&5%
Niagara Cow Ties....45&5@50&10&5%

Hammers—
Handled Hammers—
Heller's Machinists'...55&10@55&10&5%
Heller's Farriers'.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....50%
Farriers'.....40&10&5%
Riveting.....50%
Machinists', revised list.....66⅔&5%
Blacksmiths'.....50&5%
Fayette R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60@60&10%
Rivet and Tinners'.40&7½@40&12½&5%

Heavy Hammers and Sledges—
Under 3 lb., per lb., 50¢..80&5@—%
3 to 5 lb., per lb., 40¢..80&5@—%
Over 5 lb., per lb., 30¢.....80&10&5@—%
Wilkinson's Smiths'...lb. 9½@10¢

Handles—
Agricultural Tool Handles
Axe, Pick, &c....60&10@60&10&5%
Hoe, Rake, &c.....40%
Fork, Shovel, Spade, &c.:
Long Handles.....40%
D Handles.....40%

Cross-Cut Saw Handles—
Atkins'.....40%
Champion.....50%
Disston's.....50%

Mechanics' Tool Handles—
Auger, assorted...gro.$3.00@$3.50
Brad Awl.....gro.$1.65@$1.75
Chisel Handles, Ass'd, per gro.:
Tanged Firmer, Apple, $2.40@ $2.65; Hickory.....$2.15@2.40
Socket Firming, Apple, $1.75@ $1.95; Hickory....$1.60@$1.75
Socket Framing, Hickory, $1.60@$1.75
File, assorted.....gro. $1.30@$1.40
Hammer, Hatchet, &c. 60&10@60&10&5%
Hand Saw, Varnished, doz. 80&85¢; Not Varnished...65@75¢
Plane Handles:
Jack, doz. 50¢; Jack, Bolted.75¢
Fore, doz. 45¢; Fore, Bolted.90¢
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel.....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles.....15&10%
Nicholson Simplicity File Handle.....℔ gro. $0.85@$1.50
W. A. Zelnicker Supply Co.:
Hammer, ℔ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 in., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ℔ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ℔ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ℔ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ℔ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ℔ doz., 12 to 14 in., $2.00.
} 2%

Hangers—
NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.
Allith Mfg. Co.:
Reliable, Nos. 1 and 2; Allith, No. 3; Allith Adjustable, No. 6; Reliable Parlor Door.....50%
Chicago Spring Butt Co.:
Friction.....25%
Oscillating.....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator.....30%
Railroad.....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&2½%
Roller Bearing.....70&2½%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $1.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion.....$2.25
Barn Door, Standard.....60&10%
Hinged.....net $6.08
Covered.....60&5%
Special.....70&5%
Lawrence Bros.:
Advance.....55&10%
Cleveland.....70&7½%
Clipper, No. 75.....60%
Crown.....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2.70%
Anti-Friction.....60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22.—50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101.....50%
Tandem No. 44..2½ and 3 60&10%
Palace, Adjustable Track No. 132.....50&5%
Royal, Adjustable Track No. 122.....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48.....60&5%
Folding Door B. B. Swivel No. 135.....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Myers' Stayon Hangers.....60%
} Extra 10% often given.

Hangers— Garment—
Pullman Trouser, ℔ gro., 1 pair Flat Aluminoy, $9.00; 1 pair Round Nickeled, $9.00; 4 pair Round Nickeled, $27.00; 1 pair Flat Gun Metal, $12.00; 1 pair Flat Black Enameled, $7.50; 1 pair Wood Clamp, $13.50; Skirt Hangers, Folding, per gro., $21.00; Coat Hangers, Folding, per gro., $8.00; Garment Hanger Rods, Round Nickeled, per gro., $10.50; Garment Hanger Loops, Round Nickeled, per gro.....$10.50
Victor Folding.....℔ gro. $9.60

Gate—
Myers' Patent Gate Hangers, ℔ doz. net.....$4.50

Joist and Timber—
Lane Bros. Co.....30%

Hasps—
Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ℔ doz..60%

Hatchets—
Regular list, first qual..40&2½%@—
Second quality.....50&5%@—

Heaters, Carriage—
Clark, No. 5 $1.75; No. 5B, $2.00; No. 3 $2.25; No. 3D $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....25%
Clark Coal, ℔ doz., $0.75.....20%

Hinges—
Blind and Shutter Hinges
Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara: Clark's O. P.; Clark's Tip; Buffalo.)

No.	1	3	5
Doz. pair	$0.75	1.35	2.70

Mortise Shutter:
(L. & P., O. S., Acme, &c.)

No.	1	1½	2	2½
Doz. pair	$0.70	.65	.60	.55

Mortise Reversible Shutter (Buffalo, &c.):

No.	1	1½	2
Doz. pair	$0.70	.65	.60

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind Hinges.....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ℔ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55.....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Tip Pat'n, No. 1.....75&10%
No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer.....75&10%
Empire.....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	1	2	3
Hinges with L't'chs.	$2.00	2.70	5.00
Hinges only	1.40	2.05	3.80
Latches only	.70	.70	.35

New England:
With Latch.....doz. ...@$2.00
Without Latch...doz. ...@$1.60
Reversible Self-Closing:
With Latch.....doz. ...@$1.75
Without Latch...doz. ...@$1.35
Western:
With Latch.....doz. $1.75
Without Latch.....doz. $1.15
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

Pivot Hinges—
Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....50%

Spring Hinges—
Holdback, Cast Iron...$6.75@$7.00
Non-Holdback, Cast Iron $6.50@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Bommer Ball Bearing Floor..40%
Bommer Spring Hinges.....40%
No. 999 Wrot. Steel Hold Back, ℔ gr. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor..50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American.....30%
Columbia, ℔ gr., No. 14, $9.00; No. 18, $25.00
Columbia, Adj., No. 7, ℔ gr. $12.00
Columbian Hinges.....60&10%
Gem, new list.....30%
Clover Leaf.....℔ gr. $12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Lawson Mfg. Co. Matchless.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges.....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Chief Ball Bearing Floor Hinge.....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ℔ gr. pr.....$9.00
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%
} Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list December 20, 1904:
Light Strap Hinges..50&10%
Heavy Strap Hinges..60&5%
Light T Hinges.....50%
Heavy T Hinges.....40%
Extra Hvy. T Hinges.50&10%
Hinge Hasps.....33⅓%
Cor. Heavy Strap...60&5%
Cor. Ex. Heavy T...50&10%
} Extra 10&7½%

Screw Hook and Strap.
6 to 12 in..lb. 3¾¢
1¼ to 20 in..lb. 3½¢
22 to 36 in..lb. 3¼¢

Screw Hook and Eye:
¾ to 1 inch.....lb. 6¼¢
⅝-inch.....lb. 7¼¢
½-inch.....lb. 8¼¢

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

Hods— Coal—
M'f'gr's list, price per gross.

Inch	15	16	17	18
Galv. Open	$35	$39	$42	$46
Jap. Open	26	28	31	35
Galv. Funnel	48	48	52	56
Jap. Funnel	33	36	39	43

10&5%

Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $1.05
Steel Mortar, No. 158.....each $1.35

Hoes— Eye—
Scovil and Oval Pattern.....60&10@60&10&10%
Grub, list Feb. 23, 1899.....70&10&7½&10%

D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pattern).....60%

Handled—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$3.20
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ℔ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....℔ doz. 40&5%
Junior Size.....℔ doz. $4.00
Ft. Madison Sprouting Hoe, ℔ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.40
B. B., 6½ in.....$3.50
Acme Wedding.....℔ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ℔ doz. $5.25

Hoisting Apparatus—

See *Machines, Hoisting.*

Holders— Bit—

Angular, ℔ doz. $24.00.....45&10%

Door—

Bardsley's, Iron, 40%; Brass and Bronze.....25%
Empire.....50%
Pullman.....35%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip.....50%
Superior.....33⅓%

File and Tool—

Nicholson File Holders and File Handles.....33⅓@40%

Fruit Jar—

Triumph Fruit Jar Holder, ℔ gross, $10.80; ℔ doz.....$1.25

Trace and Rein—

Fernald Double Trace Holder, ℔ doz. pairs.....$1.25
Dash Rein Holder, ℔ doz. pairs..$1.25

Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45&20%
Coat and Hat, Wrightsville.....60&5%
Harness, Reading List.....40%

Wire—

Belt.....80%
Wire C. & H. Hooks....75@—%
Bradley Metal Clasp Wire, Coat and Hat, 70&10%; Ceiling.....70&10%
Columbian Hdw. Co., Gem.....70&5%
Parker Wire Goods Co., King..70&10%
Wire Goods Co.: Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%; Czar Harness, 50&10%.

Wrought Iron—

Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton.....*doz. $1.05@$1.25*
Wrought Staples, Hooks, &c.—See Wrought Goods.

Miscellaneous—

Hooks, Bench, see *Stops, Bench.*
Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65
Grass, best, all sizes, per doz.$3.00
Grass, common grades, all sizes, per doz.....*$1.50*
Whiffletree.....*lb. 3¾@4¢*
Hooks and Eyes:
Brass.....60@60&10%
Malleable Iron.....70@70&10%
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Ft. Madison Cut-Easy Corn Hooks, ℔ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder.....80&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—

See *Nails, Horse.*

Horseshoes—

See *Shoes, Horses.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition.....*ft. 5@ 6¢*
3-ply Guaranteed.....*ft. 8@ 9¢*
4-ply Guaranteed.....*ft. 10@11¢*
Cotton Garden, ¾-in., coupled:
Low Grade.....*ft. 8@ 9¢*
Fair Quality.....*ft. 10@11¢*

Irons— Sad—

From 4 to 10.....*lb. 3@3½¢*
B. B. Sad Irons.....*lb. 3½@3½¢*
Mrs. Potts', cents per set:

Nos.	50	55	60	65
Jap'd Tops	83	80	93	91
Tin'd Tops	88	85	98	95

New England Pressing..lb.3¾@4¢

Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner.....60%

Pinking—

Pinking Irons.....*doz.60¢*

Irons, Soldering

See *Coppers.*

Jacks, Wagon—

Covert Mfg. Co.: Auto Screw.....30&2%; Steel, 45%
Lockport.....50%
Lane's Steel.....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

Ladder—

Richards Mfg. Co., Ladder Jacks..50%

Kettles—

Brass, Spun, Plain.....*20@25%*
Enameled and Cast Iron—See Ware, Hollow.

Knives—

Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co.....60%

Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Withington Acme, ℔ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List.....*75&5@75&10%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's.....66⅔@70%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

Hay and Straw—

Serrated Edge, per doz. $5.50@5.75
Iwan's Sickle Edge.....℔ doz. $9.50
Iwan's Serrated.....℔ doz. $10.00

Miscellaneous—

Farriers'.....*doz. $3.00@3.25*
Wostenholm's.....℔ doz. $3.00@3.25

Knobs—

Base, 2½-inch, Birch, or Maple, Rubber Tip.....*gro. $1.25@$1.40*
Carriage, Jap., all sizes.....*gro. 40@45¢*
Door, Mineral.....*doz. 65@70¢*
Door, Por. Jap'd.....*doz. 70@75¢*
Door, Por. Nickel..*doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c.15%

Lacing, Leather—

See *Belting, Leather—*

Ladders, Store, &c.—

Allith Mfg. Co., Reliable.....50%
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.: Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

Ladles, Melting—

L. & G. Mfg. Co. (low list).....20%
P. S. & W.....40&10%
Reading.....60%

Lanterns—Tubular—

Regular, No. 0.....*doz. $4.35@4.50*
Side Lift, No. 0....*doz. $4.60@4.75*
Hinge Globe, No. 0. doz. $4.60@4.75
Other Styles.....*40@40&10%*

Bull's Eye Police—

3-inch.....*$4.25@4.50*

Latches— Thumb—

Roggin's Latches, with screw..*doz. 35@40¢*

Door—

Allith Mfg. Co., Reliable and Alligator, 50%; Reliable Cold Storage, 50%
Cronk & Carrier Mfg. Co., No. 101, ℔ doz. $2.30
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50

Leaders, Cattle—

Small.....*doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

Leathers, Pump—

See *Pumps—*

Lifters, Transom—

R. & E.....10%

Lines—

Wire Clothes, Nos.	*18*	*19*	*20*
100 feet.....	*$2.50*	*2.25*	*2.00*
75 feet.....	*$2.10*	*1.80*	*1.65*

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....℔ list, 20%
Masons' Lines, Shade Cord, &c.: White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Turner & Stanton Co.: Solid Braided Chalk, Masons' and Awning Lines.....40%
Clothes Lines, White Cotton.....20%
Shade Cord, Cotton or Linen....20%

Locks— Cabinet—

Cabinet Locks.....*33⅓%*

Door Locks, Latches, &c.—

NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....40%
R. & E. Mfg. Co.....10%

Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

Sash, &c.—

Ives' Patent: Bronze and Brass, 55&5%; Crescent, 60%; Iron, 60%; Window Ventilating, 40&20%; Robinson Pat. Ventilating Sash Lock, 33⅓%.
Pullman Patent Ventilating Lock..35%
Reading Sash Locks.....40%

Machines—Boring—

Com. Upr't, without Augers......*$2.00@2.25*
Com. Angl'r, without Augers.....*$2.25@2.50*
Swan's Improved.....40&10%
Jennings', Nos. 1 and 4.....25&7½%
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90

Corking—

Reisinger Invincible Hand Power....℔ doz. $18.00

Fence—

Williams' Fence Machines....each, $5.50

Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Cyclone, High Speed Chain Hoist.....25%

Ice Cutting—

Chandler's.....12½%

Washing

Boss Washing Machine Co.:	Per doz.
Boss No. 1	$57.00
Boss Rotary	$57.00
Champion Rotary Banner No. 1	$57.00
Standard Champion No. 1	$50.00
Standard Perfection	$27.00
Cincinnati Square Western	$33.00
Uneeda American, Round	$33.60

Mallets—

Hickory.....*45&5@50%*
Lignumvitæ.....*45&5@50%*
Tinners' Hickory and Applewood.....*doz. 45&5@50%*

Mangers, Stable—

Swett Iron Works.....50%

Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.50%

Mattocks—

See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—

Enterprise Mfg. Co.....20@25%
National list Jan. 1, 1902.....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....50&10%
Swift, Lane Bros. Co.....30%

Motors, Water—

Divine's Red Devil.....30%
Lippincott's.....30%

Mowers, Lawn—

NOTE.—Net prices are generally quoted
Cheapest.....*all sizes, $1.85@2.00*
Cheap.....*all sizes, $2.00@2.50*
Better Grade..*all sizes, $2.50@4.50*

	12	*14*	*16*	*18-in.*
High Grade....	*$4.50*	*4.75*	*5.00*	*5.25*

Continental.....60%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel.....70%
Style B, Low Wheel.....70%
Style C, High Wheel, spcl. list, 70&10%
Style D, High Wheel, spcl. list..70%
Philadelphia:
Styles M., S., C., K., T....70&10&5%
Style A, all Steel.....60&10&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.40%
Horse.....40&5%
Pony.....40&5%
36-in. Horse.....30&10%
Eagle Horse.....30&5%
I. X. L. Horse.....50%

Nails—

Wire Nails and Brads, Miscellaneous.....*87½@87½&10%*
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers' &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	...40&5%
Coleman	13	12	12	11	11	.....net
New Haven..	23	21	20	19	18	...40&5%
Livingston	19	18	17	16	16	.....10%

Western.....℔ lb 8¼¢
Jobbers' Special Brands.....*per lb .9@10¢*

Picture—

	1½	*2*	*2½*	*3*	*in.*
Brass H'd.	*.45*	*.55*	*.60*	*.70*	*.. gro*
Por. Head...	*1.10*	*1.10*	*1.10*		*.. gro*

Nippers—

See *Pliers and Nippers.*

Nuts—

Cold Punched: *Off list.*
Square, Blank or Tapped..4.80¢
Hexagon, Blank or Tapped..5.10¢
Square, Bl'k, C., T. & R...5.10¢
Hexagon, Bl'k, C., T. & R.5.70¢
Hot Pressed:
Square, Blank.....*5.30¢*
Hexagon, Blank.....*5.70¢*
Square, Tapped.....*5.20¢*
Hexagon, Tapped.....*5.60¢*

Oakum—

Best.....*lb., 6½¢*
U. S. Navy.....*lb., 6¢*
Navy.....*lb., 5¢*
Plumbers' Spun Oakum..*3¾@3¢*

Oil Tanks—See *Tanks, Oil.*

Oilers—

Steel, Copper Plated.....*75%*
Chase or Paragon:
Brass and Copper.....*50&10%*
Zinc.....*65&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.: Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

Openers— Can— *Per doz.*

Sprague, Iron Handle....*30@35¢*
Sprague, Wood Handle...*35@40¢*
Sardine Scissors.....*$1.75@$3.00*
Yankee Can and Bottle Opener, ℔ doz., net, $0.75; Little Gem, ℔ doz., net.....$0.65

Egg—

Hartigan Nickel Plate, ℔ doz., $2.00; Silver Plate, $4.00.

Packing—

Asbestos Packing, Wick and Rope.....*20@25¢*

Rubber—

(Fair quality goods.)

Sheet, C. I.....*11@12¢*
Sheet, C. O. S.....*11@12¢*
Sheet, C. B. S.....*12@13¢*
Sheet, Pure Gum.....*40@45¢*
Sheet, Red.....*40@50¢*
Jenkins' '96, ℔ lb. 80¢.....25%

Miscellaneous—

American Packing...*lb. 7@10 ¢*
Cotton Packing.....*lb. 16@25 ¢*
Italian Packing.....*lb. 9@12½¢*
Jute.....*lb. 4@ 4½¢*
Russia Packing.....*lb. 8@11 ¢*

Pails, Water, Well, &c.—

See *Buckets.*

Pans— Dripping—

Standard List.....*65&7½@70%*
Edwards, Royal Blue.....65&7½%

Fry—

Common Lipped:

Nos.	*1*	*2*	*3*	*4*	*5*
Per doz..	*$0.75*	*0.80*	*0.90*	*1.10*	*1.30*

Refrigerator, Galva.—

Inch.....	*12*	*14*	*16*	*18*
Per doz....	*$1.75*	*2.25*	*2.80*	*3.15*

Paper—Building Paper

Asbestos: *lb.*
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.3½to5¢
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.....*6¢*
Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.....*3@5¢*
Per roll
Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll.....*48@58¢*
Medium weight, 30 lbs. to roll.....*56@70¢*
Heavy weight, 40 lbs. to roll..*75@78¢*
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb. ton.....*$34.50*
Red Rope Roofing, 250 sq. ft. per roll.....*$1.75*

Tarred Paper—

1 ply (roll 400 sq. ft.), ton.....*$34.00@$38.00*
2 ply, roll 108 sq. ft.....*65¢*
3 ply, roll 108 sq. ft.....*88¢*
Slater's Felt (roll 500 sq. ft.)..80¢

Sand and Emery—

Flint Paper and Cloth.50&10@—%
Garnet Paper and Cloth....*25%*
Emery Paper and Cl'h..50&10@60%

Parers— Apple—

Goodell Co.:
Family Bay State.....℔ doz. $15.00
Improved Bay State.....℔ doz. $36.00
New Lightning.....℔ doz. $7.00
Turn Table '98.....℔ doz. $6.00
White Mountain.....℔ doz. $5.00
Bonanza Improved.....each $7.50
Dandy.....each $10.00
Eureka Improved.....each $20.00
New Century.....each $20.00
Ranger.....each $25.00

Livingston Nail Co.:
Daisy.....℔ doz. $4.00
Little Star.....℔ doz. $5.00
Rocking Table.....℔ doz. $6.20

Reading Hardware Co.:
Advance.....℔ doz. $4.00
Baldwin.....℔ doz. $4.00
Reading 72.....℔ doz. $3.25
Reading 78.....℔ doz. $6.25

Potato—

Saratoga.....℔ doz. $7.80
White Mountain.....℔ doz. $8.00

Picks and Mattocks—

List, Feb. 23, 1899.70&10@70&10&5%
Cronk's Handled Garden Mattock, ℔ doz., No. 2, $2.60; No. 3, $6.40.

Pinking Irons—
See *Irons, Pinking.*

Pins, Escutcheon—
Brass .....50@50&10%
Iron, list Nov. 11, '85..60@60&10%

Pipe, Cast Iron Soil—
Standard, 2-6 in.....60&10@—%
Extra Heavy, 2-6 in..70&10@—%
Fittings, Standard and Heavy, 75&10@—%

Pipe, Merchant—

	Consumers, Carloads. Steel. Blk.	Galv.	Iron. Blk.	Galv.
	%	%	%	%
⅛ & ¼ in...	64	48	57	41
⅜ in.....	66	52	59	41
½ in.....	68	56	61	49
¾ to 6 in....	72	62	66	56
7 to 12 in....	69	54	61	46

Pipe, Vitrified Sewer—
Carload lots.
Standard Pipe and Fittings, 8 to 24 in., f.o.b. factory:
First-class 82%
Second-class 85%

Pipe, Stove—

Edwards' Nested:	Per 100 joints. C. L.	L. C. L.
5 in., Standard Blue....	$6.25	$7.25
6 in., Standard Blue....	6.75	7.75
7 in., Standard Blue....	7.75	8.75
5 in., Royal Blue.....	7.00	8.00
6 in., Royal Blue.....	7.50	8.50
7 in., Royal Blue.....	8.50	9.50
Wheeling Corrugating Co.'s Nested:		
5 in., Uniform Color..	$6.15	$7.15
6 in., Uniform Color..	6.65	7.65
7 in., Uniform Color..	7.65	8.65

Planes and Plane Irons—

Wood Planes—
Bench, first qual.....30@30&10%
Bench, second qual...40@40&10%
Molding .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union 60%

Iron Planes
Chaplin's Iron Planes.....50&10%
Union 60%

Plane Irons—
Wood Bench Plane Irons, list Dec. 12, '06.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union 50%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand—
Kohler's Eclipse.....⅌ doz. $8.00

Plates—
Felloe .....lb. 4@4¼¢

Pliers and Nippers—

Button Pliers....75&5@75&10&5%				
Gas Burner, per doz., 6 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.				
Gas Pipe..	7	8	10	12-in.
	$2.00	$2.25	$2.75	$3.50

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....60%
Improved Button.....75&10%
Cronk's 60%
No. 80 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers 40%
Wm. Schollhorn Co.:
Bernard, 35%; Elm City, 35%; Paragon, 50%; Lodi, 55%.
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.: Pliers and Nippers, all kinds.....40%

Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10%
Extension Sights.....30@30&10%
Machinists' Levels.....40@40&10%
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels.....60&10%
Stanley's Duplex.....33⅓%
Woods' Extension.....33⅓%

Points, Glaziers'—
Bulk and 1-lb. papers...lb. 9½¢
¼-lb. papers.....lb. 10 ¢
⅛-lb. papers.....lb. 10½¢

Police Goods—
Manufacturers' Lists...25@25&5%
Tower's 25%

Polish—Metal, Etc—
Prestoline Liquid, No. 1 (¼ pt.), ⅌ doz., $3.00; No. 2 (1 qu.), $9.00..40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ⅌ doz. 50¢; ⅌ gro. $4.50; ½ lb boxes, ⅌ doz. $1.25; 1 lb boxes, ⅌ doz. $2.25.
U. S. Liquid, 8 oz. cans, ⅌ doz., $1.25.
Barkeepers' Friend Metal Polish, ⅌ doz., $1.75.

Stove—
Black Eagle Benzine Paste, 5 lb cans, ⅌ lb 10¢
Black Eagle, Liquid, ⅛ pt. cans.. ⅌ doz. 75¢
Black Jack Paste, ¾ lb cans, ⅌ gr. $9.00
Black Kid Paste, 5 lb can....each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon's, ⅌ gr. $5.75.....10%
Dixon's Plumbago.....⅌ lb 8¢
Fireside .....⅌ gr. $2.50
Gem, ⅌ gr. $4.50.....10%
Japanese .....⅌ gr. $3.50
Jet Black.....⅌ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ⅌ doz. $1.50

Poppers, Corn—
1 qt. Square..doz.$0.88; gro.$8.75
1 qt. Round..doz.$1.00; gro.$10.00
1½ qt. Square..doz.$1.10; gro.$11.00
2 qt. Square..doz.$1.35; gro.$13.50

Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

Potato Parers—
See *Parers, Potato.*

Pots, Glue—
Enameled .....35&10%
Tinned .....50&10%

Powder—
In Canisters:
Duck, 1 lb.....each 45¢
Fine Sporting, 1 lb....each 75¢
Rifle, ½-lb.....each 15¢
Rifle, 1-lb.....each 25¢
In Kegs:
12½-lb. kegs.....$3.50
25-lb. kegs.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

King's Smokeless:	Shot Gun.	Rifle.
Keg (25 lb bulk).....	$12.00	$15.00
Half Keg (12½ lb bulk)...	6.25	7.75
Quarter Keg (6¼ lb bulk).	3.25	4.00
Case 24 (1 lb cans bulk)..	14.00	17.00
Half case 12 (1 lb c. bk)..	7.25	8.75

Presses—

Fruit and Jelly—
Enterprise Mfg. Co.....20@25%

Seal Presses—
Morrill's No. 1, ⅌ doz., $20.00.....50%

Pruning Hooks and Shears
See *Shears.*

Pullers, Nail—
Cyclops 50%
Miller's Falls, No. 3, ⅌ doz., $12.00.. .....33⅓&10%
Morrill's No. 1, Nail Puller, ⅌ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant 50%
Staple Pullers, Utica and Davison 60%

Pulleys, Single Wheel—

Inch	1½	1¾	2	3
Awning or Tackle, doz......	$0.30	.45	.60	1.05
Hay Fork, Swivel or Solid Eye. doz., ¼ in., $1.25; 5 in., $1.55				
Inch	2	2¼	2½	
Hot House, doz....$0.65		.85	1.20	
Inch	1¼	1½	1¾	2
Screw, doz....$0.16		.19	.23	.30
Inch	1¾	2	2¼	2½
Side, doz.....$0.25		.40	.55	.60
Inch	1½	1¾	2	2½

Sash Pulleys—
Common Frame; Square or Round End, per doz, 1¾ and 2 in.....17@20¢
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in....20@21¢
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel, Eagle.....17@20¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ⅌ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. .....20½¢
No. 26, Trov..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26..1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

Pumps—
Cistern 60%
Pitcher Spout.....75&5@75&10%
Wood Pumps, Tubing, &c....80%
Barnes Dbl. Acting (low list)....40&5%
Barnes Pitcher Spout.....75&10%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....$18.00
Daisy Spray Pump.....⅌ doz. $6.50
Flint & Walling's, Fast Mail Hand, (low list).....50%
Flint & Walling's Fast Mail (low list) 50%
Flint & Walling's Tight Top Pitcher, 75&10%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....30%
Myers' Pumps (low list).....40&5%
Myers' Power Pumps.....40&5%
Myers' Spray Pumps.....40&5%

Pump Leathers—

Plunger and Valve Leathers—Per gro.:				
No.....	2	2½	3	3½	4
	$3.10	3.70	4.35	4.95	5.60
Cup Leathers—Per 100:					
Inch.....	2½	3	3½	4	
	$3.89	4.75	6.20	8.80	

Punches—
Saddlers' or Drive, good..... doz. 50@75¢
Spring, single tube, good quality $1.75
Revolving (4 tubes)....doz.$3.60
Bemis & Call Co.'s Cast St'l Drive.50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Wm. Schollhorn Co.:
Belt and Ticket, Bernard, 35%; Paragon, 50%; Lodi.....55%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ⅌ doz., $1.44.....40%

Rail—Barn Door, &c.—
Sliding Door, Painted Iron.... 2½@2¾¢
Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢ 30%
Allith Mfg. Co.: Reliable Hanger Track 50%
Cronk's:
Double Braced Steel Rail..⅌ ft. 3¼¢
O. N. T. Rail.....$3.12
Griffin's:
xxx, ⅌ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ⅌ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ⅌ 100 ft. $3.45
O. N. T., ⅌ 100 ft., 1 in., $3.00; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....⅌ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ⅌ 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
McKinney's:
Hinged Hanger Track, ⅌ ft., 11¢, 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards' Mfg. Co.:
Common, 1 x 3-8 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail...60&10%
Lag Screw Rail, No. 65.....60%
Gauge Trolley Track, ⅌ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

Rakes—
NOTE.—Many goods are sold at net prices.
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden: Champion, 75%; Ideal, 80%; Victor.....80&25%
Queen City Lawn, ⅌ doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn, ⅌ doz.....$4.00
Malleable Garden.....70&10%
Ideal Steel Garden, ⅌ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Lawn Queen, 20-tooth....⅌ doz. $3.15
Lawn Queen, 24-tooth....⅌ doz. $3.25
Paragon, 20-tooth.....⅌ doz. $2.70
Paragon, 24-tooth.....⅌ doz. $2.75
Steel Garden, 14-tooth....⅌ doz. $2.40
Malleable Garden, 14-tooth, ⅌ doz. $2.00@2.25

Rasps, Horse—
Disston's 75%
Heller Bros.'.....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard, 60&10&5%
New Nicholson.....70&10@75%
See also Files.

Razors—
Liana Bo-ras-ic.....60%
Fox Razors, ⅌ doz., No. 42, $9.00; No. 44, $20.00; No. 82, Platina, $25.00. } 40%
Red Devil.....65%

Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
2004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%.....
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

Registers—*List July 1, 1903.*
Japanned, Electroplated and Bronzed .....70@70&10%
White Porcelain Enamel....60%
Solid Brass or Bronze Metal..25%

Revolvers—
Single Action.....95¢@$1.00
Double Action, except 44 cal..$2.00
Double Action, 44 caliber....$2.00
Automatic $4.00
Hammerless $4.50

Riddles, Hardware Grade

16 in.....per doz.	$2.50@$2.75		
17 in.....per doz.	$2.75@$3.00		
18 in.....per doz.	$3.00@$3.25		

Rings and Ringers—
Bull Rings—

	2	2½	3 inch.
Steel $0 70	0.75	0.80	doz.
Copper $1 10	1.25	1.65	doz.

Hog Rings and Ringers—
Hill's Rings, gro. boxes....$4.25
*Hill's Ringers, Gray Iron, doz.*60¢
*Hill's Ringers, Malleable Iron. doz.*80¢
Blair's Rings.....per gro. $3.00
Blair's Ringers.....per doz.75¢
Brown's Rings.....per gro.$3.25
Brown's Ringers....per doz.75¢

Rivets and Burrs—
Copper .....40&10@50%
Carriage, Coopers', Tinners, &c.:
Black .....70&10%
Metallic Tinned.....70%

Bifurcated and Tubular—
Assorted in Boxes.
Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.
Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.

Rollers—
Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%

Rope—
Manila, 7-16 in. diam. and larger: Pure .....lb., 11½@12¢
Sisal, 7-16 in. diam. and larger: Pure .....lb., 8¢
Sisal, 7-16 in. diam. and larger: No. 2 quality.....lb., 7@7¼¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Mixed .....lb., 7@7¼¢
Pure .....lb., 9¼¢
Sisal, Tarred, Medium Lath Yarn, Coarse and Untarred: Mixed .....lb., 6¼@6¾¢
Pure .....lb., 7¼¢
Cotton Rope: Best, ¼-in. and larger...18@20¢
Medium, ¼-in. and larger.16@17¢
Common, ¼-in. and larger..10¢
In coils, ½¢ advance.
Jute Rope: Thread, No. 1, ¼-in. & up, lb., 7½@8¢
Thread, No. 2, ¼-in. & up, lb., 7@7½¢

Wire Rope—
Galvanized .....37½&2½%
Plain .....45&2½%

Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal.....20%

Rules
Boxwood .....60@60&10%
Ivory .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood 60%
Flexifold 40%
Ivory .....25@25&10%
Miscellaneous .....50@50&10%
Stephens' Combination.....55%
Stationers' .....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Unson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

Sash Balances—
See *Balance, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins':
Circular 45%
Band ..... 50@50&10%
Butcher Saws 50%
Cross Cuts 35%
One-Man Cross Cut 40%
Narrow Cross Cut 50%
Hand, Rip and Panel ..... 35&5%
Miter Box and Compass 40%
Mulay, Mill and Drag 45%
Wood Saws ..... 40&10%
Chapin-Stephens Co.:
Turning Saws and Frames ..30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ..... 30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth .50%
Band, 2 to 18 in. wide 60%
Band, ¼ to 1¾ 60%
Crosscuts 45%
Narrow Crosscuts 50%
Mulay, Mill and Drag 50%
Framed Woodsaws 25%
Woodsaw Blades 25%
Woodsaw Rods, Tinned 15%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1 0, 00, Combination 30%
Compass, Key Hole, &c. 25%
Butcher Saws and Blades 30%
C. E. Jennings & Co.'s:
Back Saws 16⅔%
Butcher Saws ..... 25&7½%
Compass and Key Hole Saws, 33⅓&7½%
Framed Wood Saws ..... 25&7½%
Hand Saws 12½%
Wood Saw Blades ..... 33⅓&7½%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Massachusetts Saw Works:
Victor Kitchen Saws ..... 40&10&50%
Butcher Saws Blades ..... 35@40%
Peace & Richardson's Hand Saws ...30%
Simonds':
Circular Saws 45%
Crescent Ground Cross Cut Saws ..30%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws .45%
Band Saws 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand 45%
Compass, Key Hole, &c. ..25@25&7½%
Wood Saws ..... 40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws 50%

Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A ..25%
Disston's:
Concave Blades 25%
Keystone Blades 35%
Hack Saw Frames 30%
Simonds File Co. 35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 .... 40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades ..... 40&10%
Griffin's Hack Saw Frames ..35&5&10%
Griffin's Hack Saw Blades ....35&5&10%
Star Hack Saws and Blades ..... 15&10%
Sterling Hack Saw Blades ....30&10&5%
Sterling Hack Saw Frames ..30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 ..10%
Victor Hack Saw Blades 20%
Victor Hack Saw Frames 40%

Scroll—

Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 .... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00 .. 15&10%

Scales—

Family, Turnbull's ....50@50&10%
Counter:
Hatch, Platform, ½ oz. to ¼ lbs. ..... doz., $5.50
Two Platforms, ½ oz. to 8 lbs. ..... doz., $16.00
Union Platform, Plain $1.70@1.90
Union Platform, Stpd. $1.85@2.15
Chatillon's:
Eureka 25%
Favorite 40%
Crocers' Trip Scales 50%
The Standard Portables 40%
The Standard R. R. and Wagon ..... 50&10%

Scrapers—

Box, 1 Handle ..... doz. $2.00@2.25
Box, 2 Handle ..... doz. $2.50@2.60
Ship .... Light, $2.00; Heavy, $1.50
Chapin-Stephens Co., Box ...30@30&10%
Richards Mfg. Co., Foot 60%

Screws—Bench and Hand

Bench, Iron, doz., 1 in., $2.50@2.75; 1¼, $3.00@3.25; 1¼, $3.50@3.75
Bench, Wood ..... 20@20&10%
Hand, Wood ...70&10@70&10&10%
Chapin-Stephens Co., Hand ..... 70@70&10&2½%

Coach, Lag and Hand Rail—

Lag, Cone Point ..... 75&10&10%
Coach, Gimlet Point ...75&10&5%
Hand Rail ..... 70&10@75%

Jack Screws—

Standard List ..... 70&10@75%
Millers Falls ..... 50&10&10%
Swett Iron Works ..... 70@75%

Machine—

Cut Thread, Iron, Brass or Bronze:
Flat Head or Round Head, 50@50&10%
Fillister Head ..... 40@40&10%
Rolled Thread, F. H. or R. H., Iron ..... 75&10%
F. H. or R. H., Brass, Nos. 8 to 1¼ ..... 65&10%

Set and Cap—

Set (Iron) ..... 75&10&7½%
Set (Steel), net advance over Iron 25%
Sq. Hd. Cap ..... 70&10&7½%
Hex. Hd. Cap ..... 70&10&7½%
Rd. Hd. Cap ..... 50&7½%
Fillister Hd. Cap ..... 60&7½%

Wood—

List July 23, 1903.
Flat Head, Iron .... 87½&5@.. %
Round Head, Iron .... 85&5@.. %
Flat Head, Brass .... 80&5@.. %
Round Head, Brass .. 77½&5@.. %
Flat Head, Bronze .... 75&5@.. %
Round Head, Bronze .72½&5@.. %
Drive Screws ..... 87½&5@.. %

Scroll Saws—

See *Saws, Scroll.*

Scythes—

Per doz.

Grass, No. 1, Plain .... $6.25@6.75
Clipper, Bronzed Webb .$6.50@7.00
No. 3 Clipper, Pol'd Webb .. $6.75@7.25
No. 6 Clipper and Solid Steel, $7.00@7.50
Bush, Weed and Bramble, No. 2. $6.50@7.00
Grain, No. 1 ..... $8.25@8.75
Bronzed Webb, No. 1 .. $8.50@9.00
Nos. 3 and 4 Clipper, Grain .. $8.75@9.25
Solid Steel, No. 6 ..... $9.25@9.75

Seeders, Raisin—

Enterprise ..... 25@30%

Sets— Awl and Tool—

Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 ..20&10%

Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... per doz sets $9.00

Sets, Nail—

Octagon ..... gro. $3.50@3.75
Buck Bros. 27½%
Cannon's Diamond Point, per gro. $12. 40&10%
Mayhew's ..... per gro. $9.00
Snell's Corrugated Cup Pt.....40&10%
Snell's Knurled, Cup Pt.....40&10%
Victor Knurled Cup Pt.... per gro. $7.50

Rivet—

Regular list ..... 75@75&10%

Saw—

Atkin's:
Criterion 40%
Adjustable 40%
Disston's Star, Monarch and Triumph 30%
Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut $20.60
No. 5, Mill $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style $10.00
Special $16.25
Giant Royal Cross Cut ..... per doz. $8.00
Royal, Hand ..... per doz. $4.50
Taintor Positive ..... per doz. $4.75

Shaving—

Fox Shaving Sets, No. 30 ..... per doz., net, $24.00
Smith & Hemenway Co.'s 75%

Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, per doz. $1.50
Mounted Kitchen Sand Stone, per doz. $1.50
Natural Grit Carving Knife Hones, per doz. $3.00
Quick Cut Emery Carving Knife Hones, per doz. $1.50
Quick Edge Pocket Knife Hones, per doz. $2.50

Skate—

Smith & Hemenway Co., Eureka..50%

Shaves, Spoke—

Iron ..... doz. $1.10@1.25
Wood ..... doz. $1.75@2.25
Bailey's (Stanley R. & L. Co.) 45%
Chapin-Stephens Co. ..... 30@30&10%
Goodell's, per doz. $9.00 ..... 15&10%

Shears—

Cast Iron..	7	8	9 in.	
Best	*$16.00*	*18.00*	*20.00*	*gro.*
Good	*$13.00*	*15.00*	*17.00*	*gro.*
Cheap	*$5.00*	*6.00*	*7.00*	*gro.*

Straight Trimmers, &c.:
Best quality Jap .... 70@70&10%
Best quality, Nickel .. 60@60&10%
Tailors' Shears ..... 40@40&10%
Acme Cast Shears ..... 40@40&5%
Heinisch's Tailor's Shears 10%
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list ..... 30&10&5%
Grass ..... 50&10%
Horse or Mule ..... 50&10%

Tinners' Snips—

Steel Blades ..... 20&5@20&10%
Steel Laid Blades ..... 40&10@50%
Forged Handles, Steel Blades, Berlin 50%
Heinisch's Snips 40%
Jennings & Griffin Mfg. Co.'s 6½ to 10 in. ..... 33⅓&7½%
Niagara Snips 40%
P. S. & W. Forged Handles 25%
W. R. W. ..... 40&10%

Pruning Shears—

Cronk's Hand Shears 33⅓%
Cronk's Wood Handle Shears 33⅓%
Disston's Combined Pruning Hook and Saw, per doz. $18.00 ..... 25%
Disston's Pruning Hook only, per doz. $12.00 ..... 25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades 40%
P. S. & W. Co. ..... 40&10%
Columbian-Cutlery Co.:
Hedge, Wilcut Brand ..... 60&10%
Lawn and Border, Wilcut Brand.. 60&10%

Sheaves—Sliding Door—

Reading 40%
R. & E. list 15%

Sliding Shutter—

Reading list 40%
R. & E. list 10%

Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge ..... 65&10%
Club, Rival, 65&5%; First Quality, 60&5%

Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, 25&10%
Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade, 25&5%
Union, League, 12 and 12 gauge; Rival Grade 25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20&5%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade..20%

Shells, Loaded—

Loaded with Black Powder .. 40%
Loaded with Smokeless Powder, medium grade ..... 40&5%
Loaded with Smokeless Powder, high grade ..... 40&10&10%
Union Metallic Cartridge Co.:
New Club, Black Powders 40%
Nitro Club, Smokeless Powders.40&5%
Arrow, Smokeless Powders.40&10&10%
Winchester:
Smokeless Repeater Grade ..... 40&5%
Smokeless Leader Grade ...40&10&10%
Black Powder 40%

Shingles, Metal— Per Sq.

Edwards Mfg. Co.:	Painted.	Galv.
14 x 20	$4.25	$6.00
10 x 14	4.50	6.25
7 x 10	4.75	6.50

Wheeling Corrugating Co.:

Dixie, 14 x 20 in.	$4.25	$5.50
Dixie, 10 x 14 in.	4.50	6.00
Dixie, 7 x 10 in.	5.00	6.75

Shoes, Horse, Mule, &c.—

F.o.b. Pittsburgh:
Iron ..... per keg. $4.10
Steel ..... per keg. $3.85
Burden's, all sizes ..... per keg $3.90

Shot—

25-lb. bag.
Drop, up to B $1.85
Drop, B and larger 2.10
Buck 2.10
Chilled 2.10
Dust 2.30

Shovels and Spades—

Association List, Nov. 15, 1902. 40%
Avery Stamping Co. 40%

Snow Shovels—

Long Handle ..... $3.25@$3.50
Wood and Mall. D. Handle, $3.75@$4.00

Sieves and Sifters—

Hunter's Imitation ..... gro. $9.50@10.00
Hunter's Genuine ..... per gro. $12.00@12.50

Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; per doz. $39.00

Sieves, Seamless Metallic

	—Per dozen.—			
Mesh	*14*	*16*	*18*	*20*
Iron Wire	*$1.05*	*1.05*	*1.10*	*1.20*
Tinned Wire	*$1.15*	*1.15*	*1.20*	*1.30*

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested .... doz. $0.90@0.95
Mesh 20, Nested .... doz. $1.00@1.05
Mesh 24, Nested .... doz. $1.30@1.40

Sinks, Cast Iron—

Painted, Standard list:
12 x 12 to 22 x 36 in 60%
20 x 40 to 24 x 50 in 50%
24 x 60 to 24 x 120 in 30%
Barnes' low list:
Up to and including 20 x 36 in.50&5%
20 x 40 to 24 x 50 in 45%

NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—

Cast Iron ..... 70@75&10%
Steel ..... 40@45%

Slates, School—

Factory Shipments.
"D" Slates ..... 50&50&10%
Eureka, Unexcelled Noiseless .. 60&5 tens
Victor A, Noiseless .60&4 tens &5%

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German ..... 40@40&10%
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%
High Grade, 40%; Trojan 40%
Jockey 25%

Snaths—

Scythe ..... 55@60%

Snips, Tinners—See *Shears.*

Spoons and Forks—

Silver Plated—

Good Quality ..... 50&10@60&5%
Cheap ..... 60@60&10%
International Silver Co.:
1847 Rogers Bros., 40&10%; Rogers & Hamilton ..... 50&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand 60%
Wm. Rogers & Son ..... 60&10%

Miscellaneous

German Silver ..... 60@60&5%

Tinned Iron—

Teas ..... per gro. 50@55¢
Tables ..... per gro. $0.90@$1.00

Springs— Door—

Bardsley's Spring and Check 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) 20%
Pullman (Coil) 35%
Reliance (Coil) ..... 40&10%
Star (Coil) 30%
Torrey's Rod, 39 in. ..... per doz. $1.10

Carriage, Wagon, &c.—

1¼ in. and Wider:	*Per 100 lb.*
Black	*$4.75@$5.00*
Half Bright	*$4.75@$5.00*
Bright	*$5.25@$5.50*

Painted Seat Springs:
1½ x 2 x 26 ..... per pr. 49@52¢
1½ x 3 x 28 ..... per pr. 73@77¢

Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, per doz. $12.00
Enterprise ..... 25@30%
Philadelphia No. 1, per doz. $12; No. 2, $15; No. 3, $20 ..... 30%

Squares—

Nickel plated .. List Jan 5, 1900.
Steel and Iron .. 75&10@80%
Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%
Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%
Disston's Try Squares and Bevels, Rosewood Handle, 60&10%; Iron Stock and Bevel 15%

Squeezers, Lemon

Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap ..... doz. $1.00
Good Grade ..... doz. $1.25
Tinned Iron ..... doz. $0.75@1.25
Iron, Porcelain Lined ... doz. $1.75

Staples—

Barbed Blind ..... lb. 6@6½¢
Electricians', Association list .. 80&10&10&10%
Fence Staples, Plain, $2.15; Galvanized $2.45
Poultry Netting Staples ..... per lb. 3¼@3½¢

Steels, Butchers'—

Dick's 30%
Foster Bros. 30%

Steelyards— .... 30@30&10%

Stocks and Dies—

Blacksmiths' ..... 50@50&10%
Curtis Rev'ble Ratchet Die Stock..25%
Derby Screw Plates 25%
Green River 25%
Lightning Screw Plate 25%
Little Giant 25%
Reece's New Screw Plates 25%

Stoners, Cherry—

Enterprise ..... 25@30%

Stones—Oil, &c.

Pike Mfg. Co., 1907 list: per lb
Arkansas St. No. 1, 3 to 5½ in. $2.80
Arkansas St. No. 1, 5½ to 8 in. $3.50
Arkansas Slips No. 1 ..... $4.00
Lily White Washita, 4 to 8 in. 60¢
Rosy Red Washita, 4 to 8 in. 60¢
Washita St., Extra, 4 to 8 in. 50¢
Washita St., No. 1, 4 to 8 in. 40¢
Washita St., No. 2, 4 to 8 in. 25¢
Lily White Slips ..... 90¢
Rosy Red Slips ..... 90¢
Washita Slips, Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Washita Slips, No. 2 ..... 40¢
India Oil Stones (entire list) 33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit 40%
Quickcut Emery and Corundum Axe Stone, Double Grit 33⅓%
Quickcut Emery Rubbing Bricks..40%
Hindostan No. 1, R'g'lar. per lb 8¢
Hindostan No. 1, Small.. per lb 10¢
Axe Stones (all kinds) 33⅓%
Turkey Oil Stones, Extra, 5 to 8 in. ..... per lb 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips ..... 40¢
Sand Stone ..... 8¢

Scythe Stones—

Pike Mfg. Co., 1901 list:
Black Diamond S. S. ℔ gro. $12.00
Lamoille S. S. ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.00
Green Mountain S. S. ℔ gro. $6.00
Extra Indian Pond S.S. ℔ gro. $7.50
No. 1 Indian Pond S.S. ℔ gro. $7.00
No. 2 Indian Pond S.S. ℔ gro. $4.50
Leader Red End S. S. ℔ gro. $4.50
Quick Cut Emery.... ℔ gro. $10.00
Pure Corundum..... ℔ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat, $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $12
Balance of 1904 list 33⅓%
Electro (Artificial), ℔ gro., $12.00 .....33⅓%
Lightning (Artificial), ℔ gro., $18.00 .....33⅓%

Stoppers, Bottle—

Victor Bottle Stoppers..... ℔ gro. $9.00

Stops— Bench—

Millers Falls.....15&10%
Morrill's, ℔ doz., No. 1, $10.00.....50%
Morrill's, No. 2, $12.50.....50%

Door—

Chapin-Stephens Co.....50@50&10%

Plane—

Chapin-Stephens Co.....20%

Straps— Box—

Acme Embossed, case lots..20&10&10%
Cary's Universal, case lots....20&10&10%

Stretchers, Carpet—

Cast Iron, Steel Points, doz. 60@60&10%
Socket .....doz. $1.66
Excelsior Stretcher and Tack Hammer Combined, ℔ doz. $6.00.....20%

Stuffers, Sausage—

Enterprise Mfg. Co.....25@25&7½%
National Specialty Co., list Jan. 1, 1902 .....30&5%
P., S. & W. Co.....40&10&5%

Sweepers, Carpet—

Bissell Carpet Sweeper Co.: ℔ doz.
Superba, Crotch Mahogany.....$36.00
Triumph, Fancy Veneers.....$33.00
Parlor Queen, Fig. Rosewood..$30.00
Elite, Hungarian Ash.....$29.00
Am, Queen, Fig. Mahogany....$27.00
Ideal, Bird's-Eye Maple.....$25.00
Grand Rapids, Nickel, Japan $24.00; $22.00
Standard, Nickel, $22.00; Japan.$20.00
Crown Jewel, Nickel, $21.00; Jap.$19.00
Crystal, Glass Top.....$36.00
Grand, 17 in. wide.....$36.00
Club, 24 in. wide.....$54.00
Hall, 28 in. wide.....$60.00

NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five dozen lots.

Tacks, Finishing Nails, &c.

American Carpet Tacks...90&25%
American Cut Tacks.....90&25%
Swedes' Cut Tacks.....90&25%
Swedes' Upholsterers'....90&35%
Gimp Tacks.....90&35%
Lace Tacks.....90&35%
Trimmers' Tacks.....90&25%
Looking Glass Tacks.....65%
Bill Posters' and Railroad Tacks, 90&40%
Hungarian Nails.....80&10%
Finishing Nails.....70%
Trunk and Clout Nails.....80%

NOTE.—The above prices are for Straight Weights.

Miscellaneous—

Double Pointed Tacks..... 90&10@90&10&10&45%
See also Nails, Wire.

Tanks, Oil and Gasoline—

Wilson & Friend Co.: Gal.	Gasoline	Oil
30	$2.75	$3.00
60	$3.50	$4.00
110	$5.00	$5.75

Tapes, Measuring—

American Asses' Skin ..50@—%
Patent Leather.....25@50&5%
Steel .....33 1-3&5%
Chesterman's .....25@25&5%
Keuffel & Esser Co.:
Favorite, Ass Skin.....40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkin's:
Asses' Skin.....40&10@50%
Metallic .....30@30&5%
Patent Bend, Leather....25&5@25&10%
Pocket .....40@40&5%
Steel .....33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. 25%
Chesterman's Steel, No. 1038L, etc. 35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger... per 100 lbs. $2.75@$3.00

Thermometers—

Tin Case, Cabinet, Flange, Dairy, &c.....30@33⅓%

Ties, Bale—Steel Wire—

Single Loop.....80&10&5%
Monitor, Cross Head, &c.70&2½%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White.....20@20&5%

Haying—

Myers' Hay Tools.....45%

Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated.....$2.00

Saw—

Atkins' Cross Cut Saw Tools....35&5%
Simonds' Improved.....33⅓%
Simonds' Crescent.....25%

Ship—

L. & I. J. White.....25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz. $1.15@$1.25; gro.....$11.50@12.00
Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50

Game—

Imitation Oneida.....75&10%
Newhouse .....45@45&5
Hawley & Norton.....65%
Victor .....75@75&10%
Oneida Community Jump.....50%
Hector .....75@75&10%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 12¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, ℔ doz., $13.25..$11.50 doz.
No. 3, Rat, ℔ doz., $6.50... $5.75 doz.
No. 3½, Rat, ℔ doz., $5.25. $4.70 doz.
No. 4, Mouse, ℔ doz., $3.85. $3.00 doz.
No. 5, Mouse, ℔ doz., $3.00. $2.25 doz.
Oneida Community:
Out o' Sight, Mouse, ℔ doz....$0.60
Out o' Sight, Rat, ℔ doz..... 1.25
Easy Set, Mouse, ℔ doz..... .35
Easy Set, Rat, ℔ doz..... 1.00
Wood Choker, Rat, ℔ doz. holes. .12
Premier Tin Choker, 5 hole, ℔ doz. traps..... .75

Trowels—

Disston Brick and Pointing... .....25%
Disston Plastering.....20%
Disston "Standard Brand" and Garden Trowels.....30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Steel Garden Trowels.. ℔ gro. $6.00
Woodrough & McParlin, Plastering.25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern.....50&10%
Western Pattern.....60&10%
Handy Trucks..... ℔ doz. $16.00
Grocery ..... ℔ doz. $15.00
McKinney Trucks.....each, net $10.00
Model Stove Trucks..... ℔ doz. $18.50

Tubs, Wash—

M'f'gr's list, price per gross.

	No. 0	1	2	3	
Galvanized.	$67	$79	$89	$99	10%

Twine, Miscellaneous—

Flax Twine:
No. 9, ¼ and ½-lb. Balls.23@25¢
No. 12, ¼ and ½-lb. Balls.21@24¢
No. 18, ¼ and ½-lb. Balls.18@20¢
No. 24, ¼ and ½ -lb. Balls. 17½@19½¢
No. 36, ¼ and ½-lb. Balls.17@19¢
Chalk Line, Cotton ½-lb. Balls .....26@31¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz.....11@19¢
Cotton Wrapping, 5 Balls to lb.. according to quality...15½@23¢
American 2-Ply Hemp, ¼ and ½-lb. Balls.....14½@15½¢
American 3-Ply Hemp, 1-lb. Balls .....15½@16½¢
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine).10½@11½¢
India 3-Ply Hemp, 1-lb. Balls 10½@11½¢
India 3-Ply Hemp, 1½-lb. Balls. 10@11¢
2, 3, 4 and 5-Ply Jute, ½-lb. Balls .....13½@14½¢
Mason Line, Linen, ½-lb. Bls.47¢
No. 26 Mattress, ¼ and ½-lb. Balls, according to quality, 30@60¢
Wool, 3 to 6 ply....B 9¢; A 10¢

Vises—

Solid Box.....50@50&10%

Parallel—

Athol Machine Co.:
Simpson's Adjustable.....40%
Standard 40%
Amateur 25%
Columbian Hdw. Co.....40%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00.
Fulton Mach. & Vise Co.:
Reed, Swivel.....25%
Star, Solid Jaw.....40%
Hollands':
Machinists' .....40@40&5%
Keystone .....65&5@70%
Lewis Tool Co.:
Adjustable Jaw.....30%
Monarch, 50%; Solid Jaw.....50%
Massey Vise Co.:
Clincher 40%
Perfect, 15%; Lightning Grip.....15%
Merrill's 20%
Millers Falls Oval Slide Pattern.60&10%
Parker's:
Victor, 20@25%; Regulars.....20@25%
Vulcan's .....40@45%
Combination Pipe.....55@60%
Prentiss .....20@25%
Rock Island 25%
Snediker's X. L.....33⅓%
Stephens' 33⅓%

Saw Filers—

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps.....30%
Perfection Saw Clamps, ℔ doz....$4.50
Reading 60%

Wood Workers—

Fulton Mach. & Vise Co.:
Reed 25%
Star 40%
Massey Vise Co.:
Lightning Grip, 15%; Perfect.....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe.....40%
Parker's Combination Pipe:
87 Series, 60%; 187 Series, 60&5%; No. 870, 40%
Rock Island Pipe.....25%

Wads—*Price per M.*

B. E., 11 up.....60¢
B. E., 9 and 10.....70¢
B. E., 8.....80¢
B. E., 7.....80¢
P. E., 11 up.....$1.00
P. E., 9 and 10..... 1.25
P. E., 8..... 1.50
P. E., 7..... 1.50
Dis. 15%
Ely's B. E., 11 and larger.$1.70@1.75
Ely's P. E., 12 to 20....$3.00@3.25

Ware, Hollow—Cast Iron, Hollow—

Stove Hollow Ware:
Enameled .....45&10%
Ground .....60&5%
Plain or Unground.....60%
Country Hollow Ware, per 100 lbs. $3.00
White Enameled Ware:
Maslin Kettles.....65&10%
Covered Wares:
Tinned and Turned.....35&10%
Enameled .....45&10%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware.....33⅓%
Iron Clad Ware.....70&10%
Lava and Volcanic, Enameled..40&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch.....	6	7	8	9
Each	45¢	50¢	55¢	65¢

Steel Hollow Ware—

Avery Spiders and Griddles..65@65&5%
Avery Kettles.....60%
Porcelained .....50&5@50&10%
Never Break Spiders and Griddles.. 65&5%
Never Break Kettles.....60%
Solid Steel Spiders and Griddles.65&5%
Solid Steel Kettles.....60%

Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

Washboards—

Solid Zinc: ℔ doz.
Crescent, family size, bent frame.$4.05
Red Star, family size, stationary protector $4.05
Double Zinc Surface:
Saginaw Globe, family size, stationary protector.....$3.55
Cable Cross, family size, stationary protector.....$3.60
Single Zinc Surface:
Naiad, family size, open back, perforated $3.00
Single Saginaw Globe.....$2.85
Brass Surface:
Brass King, Single Surface, open back $4.05
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.60
Glass Surface:
Glass King, Single Surface, open back $3.95
Enamel Surface:
Enamel King, Single Surface, ventilated back.....$3.95

Washers—Leather, Axle—

Solid .....90@90&10%
Patent .....90@90&5%
Coil: ⅞ 1 1¼ 1¼ Inch. 11¢. 12¢. 13¢. 15¢. per box

Iron or Steel—

Size of....5-16 ⅜ ½ ⅝ ¾
Washers...$5.90 5.00 3.70 3.50 3.30
The above prices are based on $5.50 off list.
In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—

Over ½ inch, barrel lots..... per lb. 1¾@2¢

Wedges—

Oil Finish.....lb., ..@3¢

Weights—Hitching—

Covert Mfg. Co.....30&2%

Sash—

Per ton, f.o.b. factory:
Eastern District.....$30.00
Southern Territory..$24.00@25.00
Western and Central Districts .....$25.00@28.50

Wheels, Well—

8-in., $2.22; 10-in., $2.82; 12-in., $3.36; 14-in., $4.80.

Wire and Wire Goods—

Bright and Annealed:
6 to 9.....72½&10&7½%
10 to 18.....72½&10&10%
19 to 26.....75&10&10&2½%
27 to 36.....77½&7½%
Galvanized:
6 to 9.....72½&10%
10 to 14.....72½&10&5%
15 to 16.....72½&10&5%
17 to 18.....72½%
19 to 26.....70&5&2½%
27 to 36.....65&10&10%
Copper:
6 to 9.....65&10&10%
10 to 14.....70&10&5%
15 to 18.....65&10&10&10%
19 to 26.....70&5&2½%
27 to 36.....72½&10&2½%
Tinned:
6 to 18.....67&10&10%
Brass .....17¼¢ lb., base
Copper .....32¢ lb., base
Cast Steel Wire.....50%

Spooled Wire—

Annealed and Tinned..70&10&10%
Brass and Copper.....60&10&10%
Retailers' Assortments, per box. $2.10@$2.40
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Steel Wire Goods..90&20@90&25%
Brass Wire Goods....90@90&10%
Brass Cup and Shoulder Hooks, 80&15%

Wire Cloth and Netting—

Galvanized Poultry Netting, 80&5@80&10%
Painted Screen Cloth, 100 ft., $1.30
Standard Galv. Hardware Grade: Per 100 sq. ft.
Nos. 2, 2½ & 3 Mesh.....$2.50
Nos. 4 and 5 Mesh.....$2.75
No. 6 Mesh.....$3.00
No. 8 Mesh.....$3.50

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural .....75@75&10%
Alligator or Crocodile..70&10@75%
Baxter Pattern S Wrenches... 70&5@70&10%
Drop Forged S.....45@45&5%
Acme .....60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40%; Adjustable S Pipe, 40%; Briggs Pattern, 40%; Combination Bright, 40%.
Steel Handle Nut.....50%
Combination Black.....40&5%
Merrick Pattern.....50%
Boardman's 40%
Coes' Genuine Knife Hdl..40&10&5&5%
Coes' Genuine Steel Hdl..40&10&5&5%
Coes' Genuine Key Model..40&10&5&5%
Coes', Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"....40&10&10&5&5%
Donohue's Engineer.....40&10%
Eagle 70%
Gem Pocket.....30%
Hercules 70%
W & B. Machinist:
Case lots.....50&5%
Less than case lots.....50%
W. & B. Railroad Special:
Case lots.....50%
Less than case lots.....40&10&5%
Solid Handles, P., S. & W., 50&10%; full cases.....50&10&5%
Stillson 65%
Uwanta Wrench Co.:
Railroad Special, Iron Handle, 40&10&5%
Other Wrenches.....50%
Vulcan and Agrippa Chain.....50%

Wrought Goods—

Staples, Hooks, &c., list March 17, '92.....90%

Zinc— *(Cask lots at mill.)*

Sheet.....per 100 lb., $7.00